REVISION HISTORY BG2T CHASSIS

MODEL

KV-HA21M83A

PART NO.: 9-872-346-01

NO.	SUFFIX	DATE	SUPP / CORR	DESCRIPTION
1	-01	2002/11	--	1st. Issue

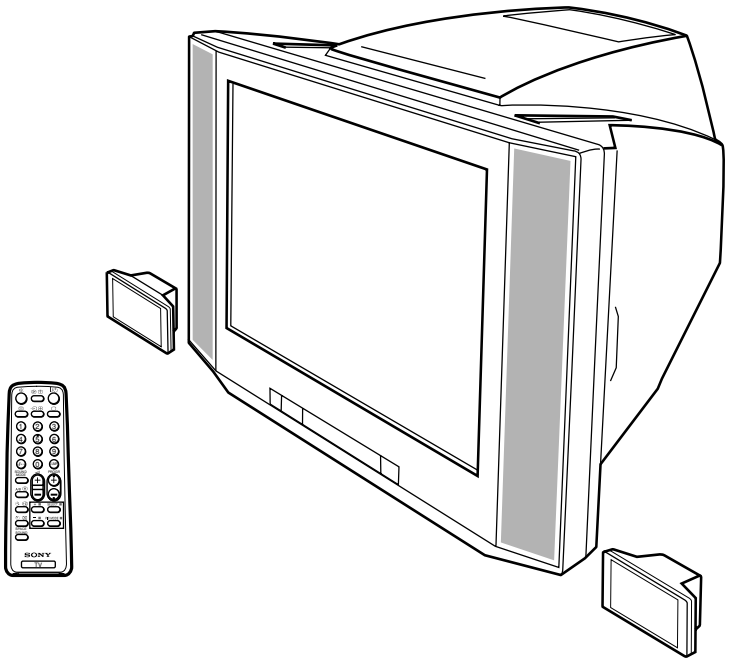
Self Diagnosis
Supported model

SERVICE MANUAL

BG2T CHASSIS

MODEL	COMMANDER	DEST.
KV-HA21M83A	RM-969	Pakistan

MODEL	COMMANDER	DEST.



TRINITRON® COLOR TV

SONY®

SPECIFICATIONS

			Note
Power requirements	220~240 V AC, 50/60 Hz		
Power consumption (W)	Indicated on the rear of the TV		
Television system	B/G, I, D/K, M		
Color system	PAL, PAL 60, SECAM, NTSC3.58, NTSC4.43		
Channel coverage			
B/G	VHF: E2 to E12 UHF: E21 to E69 CATV: S01 to S03, S1 to S41		
I	UHF: B21 to B68 CATV: S01 to S03, S1 to S41		
D/K	VHF: C1 to C12, R1 to R12 UHF: C13 to C57, R21 to R60 CATV: S01 to S03, S1 to S41, Z1 to Z39		
M	VHF: A2 to A13 UHF: A14 to A79 CATV: A-8 to A-2, A to W+4, W+6 to W+84		
(Antenna)	75-ohm external terminal		
Audio output (Speaker)	3W + 3W (TWEETER supplied)		
3D Woofer	8W		
Number of terminal			
Video	Input: 2* Output: 1	Phono jacks; 1 V_{P-P}, 75 ohms	* One input line available
Audio	Input: 2* Output: 1	Phono jacks; 500 mVrms	* One input line available
(Headphone)	Output: 1	Stereo minijack	
Picture tube	21 in.		
Tube size (cm)	54		Measured diagonally
Screen size (cm)	51		Measured diagonally
Dimension (w/h/d, mm)	639 × 485 × 490		
Mass (kg)	28		

Design and specifications are subject to change without notice.

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER lamp will automatically begin to flash.
The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER lamp flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

1. DIAGNOSTIC TEST INDICATORS

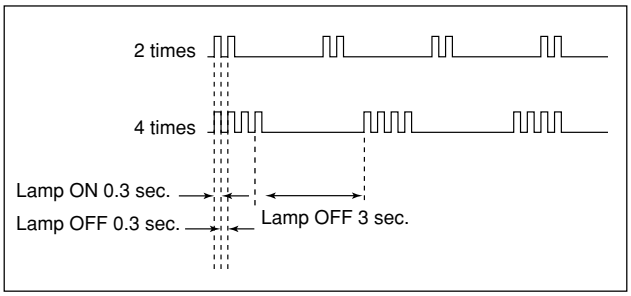
When an errors occurs, the STANDBY/TIMER lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.

Result for all of the following diagnostic items are displayed on screen. No error has occured if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY/TIMER lamp flashes	Self-diagnostic display/Diagnostic result	Probable Cause Location	Detected Symptoms
• Power does not turn on	Does not light	—	• Power cord is not plugged in. • Fuse is burned out F600 (A board)	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
• +B overcurrent (OCP) • Horizontal deflection overdrive	2 times	002:000 or 002:001~255	• H.OUT Q801 is shorted. (A board)	• Power does not come on. • Load on power line is shorted. • Has entered standby state after horizontal raster. • Power line is shorted or power supply is stopped.
• White balance failure (no PICTURE) • Vertical deflection stopped	4 times	004:000 or 004:001~225	• -13V is not supplied. (A board) • IC 551 faulty (A board)	• Vertical deflection pulse is stopped
• Micro reset	—	101:00 or 101:001~225	• Discharge CRT (CV Board) • Static discharge • External noise	• Power is shut down shortly, after this return back to normal. • Detect Micro latch up.

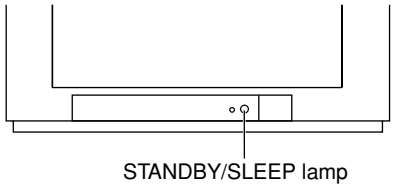
Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously.
The symptom that is diagnosed first by the microcontroller is displayed on the screen.
Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

2. DISPLAY OF STANDBY/TIMER LIGHT FLASH COUNT



Diagnostic Item	Flash Count*
+B overcurrent/overvoltage	2 times
Vertical deflection stopped	4 times

* One flash count is not used for self-diagnostic.



3. STOPPING THE STANDBY/TIMER FLASH

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER lamp from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurances of failure for confirmation on the screen:

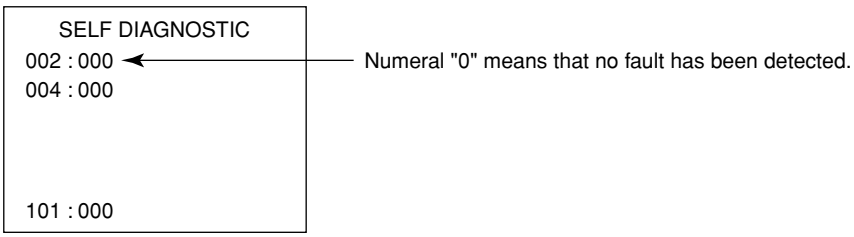
[To Bring Up Screen Test]
In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display ➡ channel 5 ➡ Sound volume - ➡ Power ON

⇧

Note that this differs from entering the service mode (mode volume +).

Self-Diagnosis screen display



5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

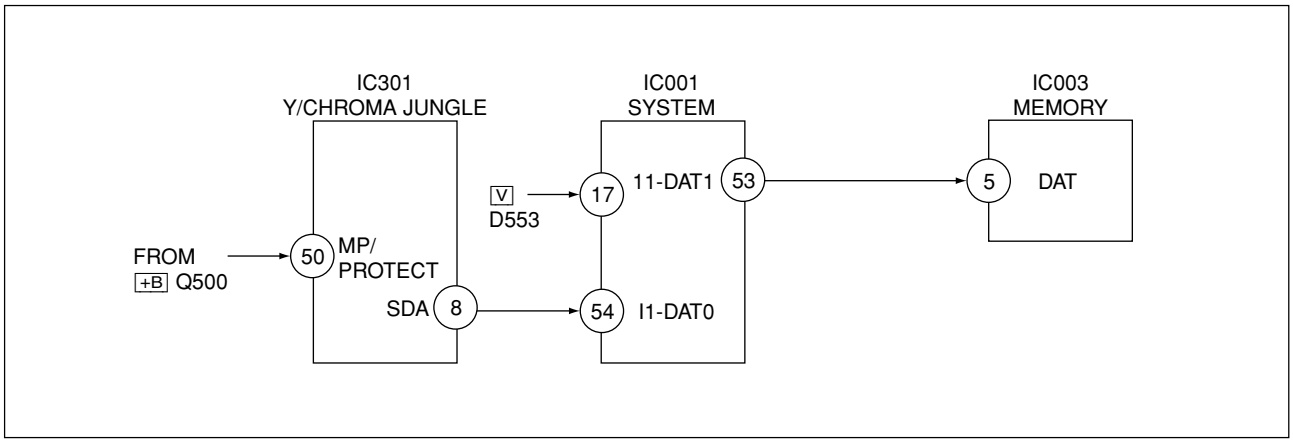
Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]
To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.

Channel [8] ➡ 0

[Quitting Self-diagnostic screen]
To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT



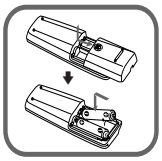
[+B overcurrent (OCP)]	Occurs when an overcurrent on the +B(135) line is detected by Q500. If Q500 go to ON and the voltage to pin 50 of IC301 more than 3.5V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.
[Vertical deflection stopped]	Occurs when an absence of the vertical deflection pulse is detected by Pin 17 and IC001 shut down the power supply.
[White balance failure]	If the RGB levels* do not balance or become low level within 5 seconds, this error will be detected by IC301. TV will stay on, but there will be no picture.

* (Refers to the RGB levels of the AKB detection Ref pulse that detects IK.)

The operating instruction mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

SECTION 1 GENERAL

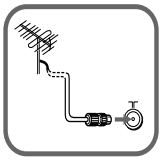
A Getting Started



Step 1

Insert the batteries (supplied) into the remote.

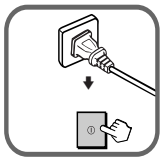
Note
- Do not use old batteries nor use different types of batteries together.



Step 2

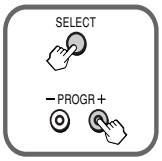
Connect the antenna cable (not supplied) to ⊤ (antenna input) at the rear of the TV.

Tip
- You can also connect your TV to other optional components. (See E)



Step 3

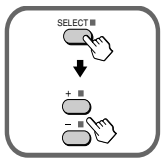
Plug in the power cord, then press ⏻ on the TV to turn it on.



Step 4

Press SELECT and PROGR + on the TV at the same time for one to two seconds to preset the channels automatically. (See J)

Tip
- To stop the automatic channel presetting, press SELECT.

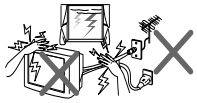


Step 5

Press SELECT on the remote until "LANGUAGE/اللغة: ENGLISH" appears on the screen, then press + or – to change the on-screen display language.

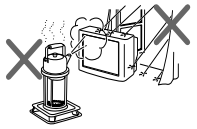
B WARNING

- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC. (220 – 240 V AC for KV-HA21M83A only).
- Do not plug in the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.
- To avoid battery leakage and damage to the remote, remove the batteries from the remote if you are not going to use it for several days. If any liquid that leaks from the batteries touches you, immediately wash it away with water.

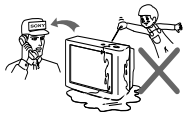


For your own safety, do not touch any part of the TV, the power cord and the antenna cable during lightning storms.

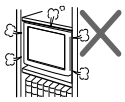
For children's safety, do not leave children alone with the TV. Do not allow children to climb onto it.



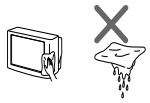
To prevent fire or shock hazard, do not expose the TV to rain or moisture.



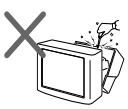
Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.



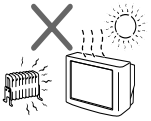
Do not block the ventilation openings of the TV. Do not install the TV in a confined space, such as a bookcase or built-in cabinet.



Clean the TV with a dry and soft cloth. Do not use benzine, thinner, or any other chemicals to clean the TV. Do not scratch the picture tube.

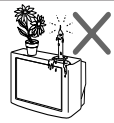


Do not open the cabinet and the rear cover of the TV as high voltages and other hazards are present inside the TV. Refer servicing and disposal of the TV to qualified personnel.



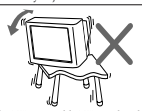
Your TV is recommended for home use only. Do not use the TV in any vehicle or where it may be subject to excessive dust, heat, moisture or vibrations.

WARNING (continued)

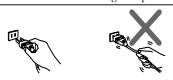


Do not place any objects on the TV.

Do not plug in too many appliances to the same power socket. Do not damage the power cord.



Install the TV on a stable TV stand and floor which can support the TV set weight. Ensure that the TV stand surface is flat and its area is larger than the bottom area of the TV.

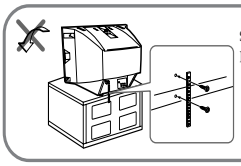


Pull the power cord out by the plug. Do not pull the power cord itself. Even if your TV is turned off, it is still connected to the AC power source (mains) as long as the power cord is plugged in. Unplug the TV before moving it or if you are not going to use it for several days.

C Securing the TV

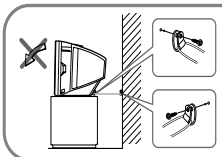
▶ **KV-HA21 only**

To prevent the TV from falling, use the supplied screws, clamps and band to secure the TV.



Screw the band to the TV stand and to the provided hole at the rear of your TV.

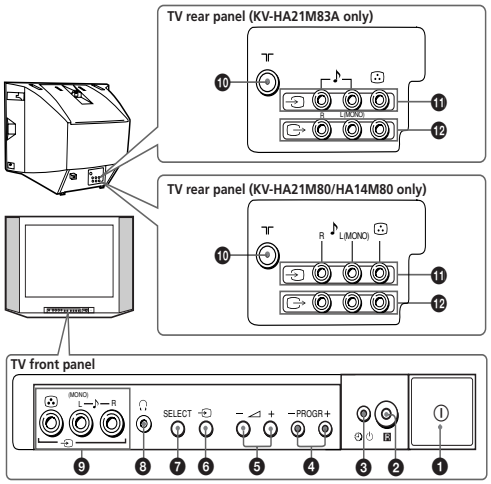
or



(1) Put a cord or chain through the clamps.
(2) Screw one clamp to a wall or pillar and the other clamp to the provided hole at the rear of your TV.

Note
- Use only the supplied screws. Use of other screws may damage the TV.

D TV front and rear panels

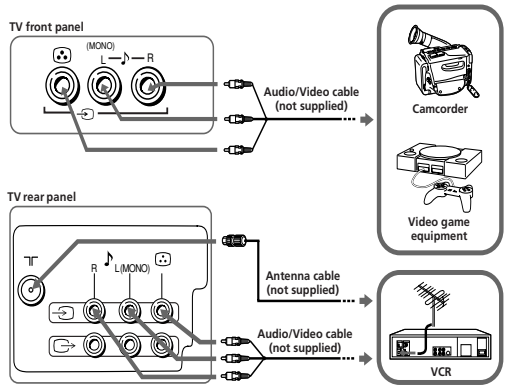


Button	Function
❶ ⏻	Turn off or turn on the TV.
❷ E	Remote control sensor.
❸ ⏻	Standby indicator.
❸ ◴	Wake Up indicator.
❹ PROGR +/–	Select program number.
❺ ◿ +/– *	Adjust volume.
❻ ⊖	Select TV or video input.
❼ SELECT	Select the desired item.
❽ ∩	Headphone terminal.
❾, ⓫ ⊖	Video input terminal.
❿ ⊤	Antenna input terminal.
⓬ ⊖	Monitor output terminal.

* You can also use the ◿ +/– buttons on the TV to work as the +/– buttons on the remote.

E Connecting optional components

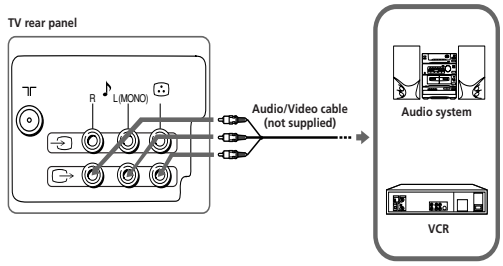
Connecting to the video input terminal ( )



Note

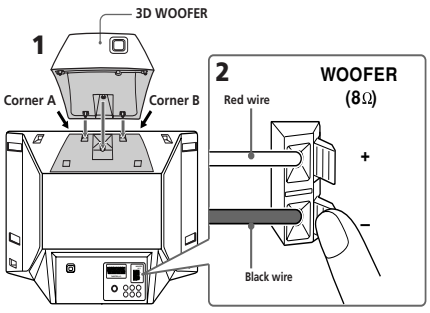
- Do not connect video equipment to (video input) at the front and the rear of your TV at the same time; otherwise the picture will not be displayed properly on the screen.

Connecting to the monitor output terminal ( )



F Connecting the 3D WOOFER

You can enjoy high quality sound by connecting the 3D WOOFER.



1 Align the front of the 3D WOOFER to corners A and B of your TV. Place the 3D WOOFER into the footholds and adjust it until it is stable.

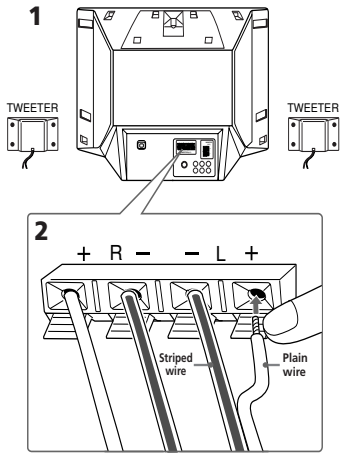
2 Connect the wires to the 3D WOOFER (8Ω) terminals at the rear of your TV. The red wire should be connected to the ⊕ red terminal and the black wire to the ⊖ black terminal.

Notes

- Connect only the supplied 3D WOOFER; otherwise your TV may malfunction.
- Unplug your TV from the wall outlet when connecting the 3D WOOFER.
- To prevent a malfunction caused by a short circuit of the terminals, make sure that none of the 3D WOOFER wire strands stick out, making contact with the neighbouring 3D WOOFER terminal.

G Connecting the TWEETER

You can enjoy high quality sound by connecting the TWEETER.



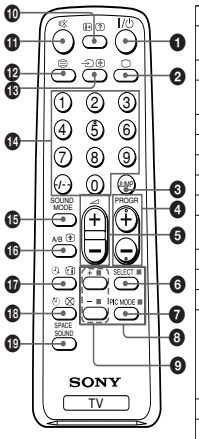
1 Place the TWEETER at the left and right side of your TV.

2 Connect the wires to the TWEETER (8Ω) terminals at the rear of your TV. The plain wire should be connected to the ⊕ red terminal and the striped wire to the ⊖ black terminal.

Notes

- Connect only the supplied TWEETER; otherwise your TV may malfunction.
- Unplug your TV from the wall outlet when connecting the TWEETER.
- To prevent a malfunction caused by a short circuit of the terminals, make sure that none of the TWEETER wire strands stick out, making contact with the neighbouring TWEETER terminal.
- Do not place any heavy objects or step on the TWEETER wire; otherwise your TV may malfunction.

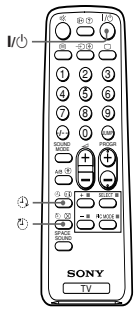
H Remote control



Button	Function	See
❶ I/⏻	Turn off temporarily or turn on the TV.	–
❷ ▢	Display the TV program.	–
❸ JUMP	Jump to previous program number.	–
❹ PROGR +/–	Select program number.	–
❺ +/–	Adjust volume.	–
❻ SELECT	Select the desired item.	–
❼ PIC MODE	Select picture mode.	K
❽ +/–	Adjust items.	–
❾	Display on-screen information.	–
❿	Mute the sound.	–
⓫	Select TV or video input.	–
⓬ 0 – 9, -/--	Input numbers.	–
Timer operations		
⓭	Set TV to turn on automatically.	I
⓮	Set TV to turn off automatically.	I
⓯ SOUND MODE	Select sound mode.	K
⓰ SPACE SOUND	Select space sound mode.	K
⓱ A/B	Not function for your TV.	–
Teletext operations (green label)		
⓲ ■ (red, green, yellow, blue)	Not function for your TV.	–
⓳ ?		
⓴ ☰		
㉑ ⇩		
㉒ ⇩		
㉓ ☰		
㉔ ⊠		

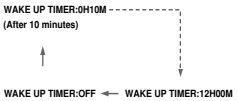
I Setting the timers

You can turn on and off your TV by using the ◴ and ◷ buttons respectively.



Setting the Wake Up timer

1 Press ◴ until the desired period of time appears on the screen.



The Wake Up timer starts immediately after you have set it.

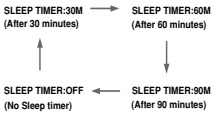
2 Select the program number or video input you want to wake up to.

3 Press I/⏻, or set the Sleep timer if you want the TV to turn off automatically.

The ◴ indicator on the TV lights up orange when the TV goes into standby mode.

Setting the Sleep timer

Press ◷ until the desired period of time appears on the screen.



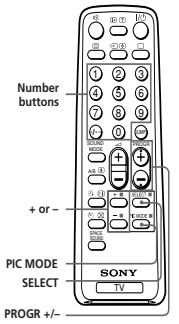
The Sleep timer starts immediately after you have set it.

Notes

- You can also cancel the Wake Up and Sleep timers by turning off the TV's main power.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into standby mode.

J Presetting channels

You can automatically preset up to 100 TV channels in numerical sequence from program number 1, or manually preset desired channels and channels that cannot be preset automatically.



Presetting channels automatically from a specified program number

1 Press SELECT until "AUTO PROGRAM" appears on the screen.

2 Press + or – once to enter the "AUTO PROGRAM" mode.

The on-screen display will start flashing.

3 Press PROGR +/– or the number buttons until the desired program number appears on the screen.

4 Press + or – to start presetting channels automatically.

Presetting channels manually

1 Press SELECT until "MANUAL PROGRAM" appears on the screen.

2 Press + or – once to enter the "MANUAL PROGRAM" mode.

3 Press PROGR +/– or the number buttons until the desired program number appears on the screen.

4 Press + or – until the desired channel picture appears on the screen.

5 To preset other channels manually, repeat steps 3 to 4.

Presetting channels (continued)

To change the TV system setting

If the picture or sound is abnormal when receiving programs through the ⅂ (antenna input) terminal

(1) Press SELECT until "TV SYS" appears on the screen.

(2) Press + or – to select the appropriate TV system until the picture or sound quality is optimal.

B/G → I → D/K → M

To change the color system setting

If the color is abnormal when receiving programs through the ⅂ (antenna input) terminal or the ⇨ (video input) terminal

(1) Press SELECT until "COLOR SYS" appears on the screen.

(2) Press + or – to select the appropriate color system until the color is optimal.

AUTO → PAL → SECAM → NTSC3.58 → NTSC4.43

To skip program numbers

(1) Press PROGR +/– or the number buttons until the unused or unwanted program number appears on the screen.

(2) Press SELECT until "MANUAL PROGRAM" appears on the screen.

(3) Press + or – once to enter the "MANUAL PROGRAM" mode.

(4) Press PIC MODE to skip the unused or unwanted program number.

(5) Press SELECT to exit the "MANUAL PROGRAM" mode.

Note

- To restore the skipped program number again, preset the channel automatically or manually.

To use the fine tuning function

The fine tuning (FINE) function may help to reduce the following problems: double images and lines moving across the TV screen.

You can use the fine tuning function as below:

(1) Select the program number you want to adjust.

(2) Press SELECT until "MANUAL PROGRAM" appears on the screen.

(3) Press + or – once to enter the "MANUAL PROGRAM" mode.

(4) Press ⓕ to display "FINE" on the screen.

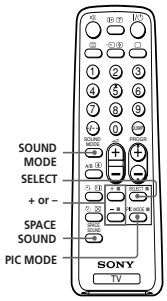
(5) Press + or – continuously until the above problems are minimized.
The + or – icon on the screen flashes while tuning.

(6) Press SELECT to exit the "MANUAL PROGRAM" mode.

K Customizing the picture and sound

You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.

You can change the sound effect by selecting the space sound mode.



Selecting the picture mode

Press PIC MODE to select the desired picture mode.

Select	To
"DYNAMIC"	view high contrast pictures.
"STANDARD"	view normal contrast pictures.
"SOFT"	view mild pictures.

Selecting the sound mode

Press SOUND MODE to select the desired sound mode.

Select	To
"♪ DYNAMIC"	listen to dynamic and clear sound that emphasizes the low and high sound.
"♪ DRAMA"	listen to sound that emphasizes vocals and background music.
"♪ SOFT"	listen to soft sound.

Adjusting the picture and sound settings

1 Press SELECT until the desired setting appears.

Each time you press SELECT, the setting item will change as follows:

PICTURE → COLOR → BRIGHT → HUE → SHARP → BASS → TREBLE → BALANCE

2 Press + or – to adjust the item.

3 To adjust other items, repeat steps 1 to 2.

Notes

- "HUE" can be adjusted for the NTSC color system only.
- Reducing "SHARP" can also reduce picture noise.

Customizing the picture and sound (continued)

Selecting the space sound mode

Press SPACE SOUND.

Select	To
"ON"	listen to monaural sound with a stereo-like effect.
"OFF"	turn off space sound mode.

Note

- You can also turn space sound on or off using the SELECT and + or – buttons.

L Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

Symptom	Solutions
Snowy picture, noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. • Preset the channel manually again. (See J) • Check the antenna setup. Contact a Sony dealer for advice.
Good picture, noisy sound	• Select the appropriate TV system. (See J)
No picture, no sound	• Check the power cord, antenna and the VCR connections. • Press I/⏻ (power) or ⏻ (main power) to turn on the TV.
Good picture, no sound	• Press + to increase the volume level. • Press 🔇 to cancel the muting.
Dotted lines or stripes	• Do not use a hair dryer or other equipment near the TV. • Check the antenna setup. Contact a Sony dealer for advice.
Double images or "ghosts"	• Use the fine tuning ("FINE") function. (See J) • Turn off or disconnect the booster if it is in use. • Check the antenna setup. Contact a Sony dealer for advice.
No color	• Select the appropriate color system. (See J) • Adjust the color level. (See K) • Check the antenna setup. Contact a Sony dealer for advice.
Abnormal color patches	• Keep external speakers or other electrical equipment away from the TV. Press ⏻ (main power) to turn off the TV for about 15 minutes, then turn it on again to demagnetize the TV.
The ⏻ (standby) indicator on your TV flashes red several times after every three seconds.	• Count the number of times the ⏻ (standby) indicator flashes. Press ⏻ (main power) to turn off your TV. Contact your nearest Sony service center.
TV cabinet creaks.	• Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction.
A "boom" sound is heard when the TV is turned on.	• The TV's demagnetizing function is working. This does not indicate a malfunction.

M Specifications

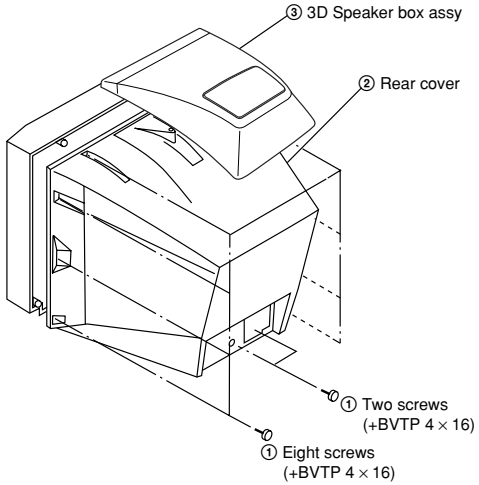
	KV-HA21M83A	KV-HA21M80	KV-HA14M80
Power requirements	220-240 V AC, 50/60 Hz	110-240 V AC, 50/60 Hz	
Power consumption (W)	Indicated on the rear of the TV		
Television system	B/G, I, D/K, M		
Color system	PAL, PAL 60, SECAM, NTSC3.58, NTSC4.43		
Channel coverage			
B/G	VHF : E2 to E12 UHF : E21 to E69 CATV : S01 to S03, S1 to S41		
I	UHF : B21 to B68 CATV : S01 to S03, S1 to S41		
D/K	VHF : C1 to C12, R1 to R12 UHF : C13 to C57, R21 to R60 CATV : S01 to S03, S1 to S41, Z1 to Z39		
M	VHF : A2 to A13 UHF : A14 to A79 CATV : A-8 to A-2, A to W+4, W+ 6 to W+84		
𝕋 (Antenna)	75-ohm external terminal		
Audio output (Speaker)	3W + 3W (TWEETER supplied)	5W + 5W	3W + 3W
3D Woofer	8W	–	–
Number of terminal			
(Video)	Input: 2* Output: 1 *One input line available	Phono jacks; 1 Vp-p, 75 ohms	
♪ (Audio)	Input: 2* Output: 1 *One input line available	Phono jacks; 500 mVrms	
∩ (Headphone)	Output: 1	Stereo minijack	
Picture tube	21 in.	21 in.	14 in.
Tube size (cm)	54	54	37
Screen size (cm)	51	51	34
Dimensions (w/h/d, mm)	639 × 485 × 490	639 × 458 × 490	466 × 346 × 419
Mass (kg)	28	26	13

Design and specifications are subject to change without notice.

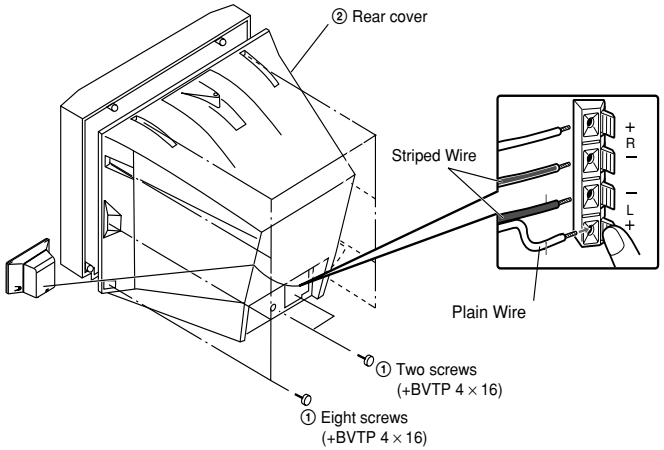
http://www.sony.net/

SECTION 2
DISASSEMBLY

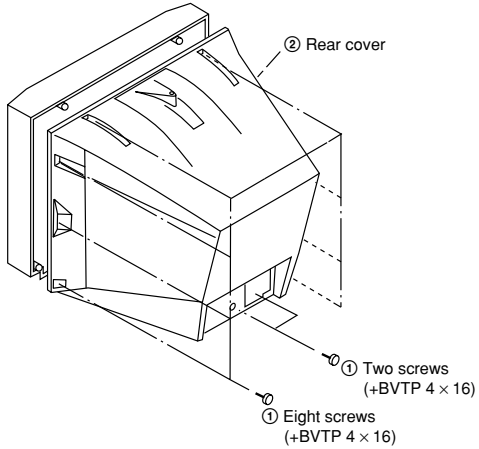
2-1. 3D SPEAKER BOX REMOVAL



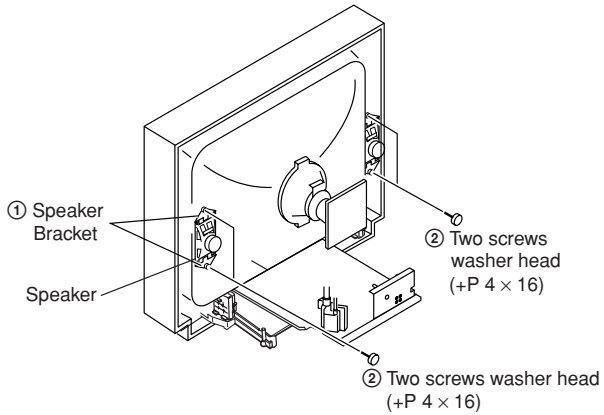
2-2. TWEETER REMOVAL



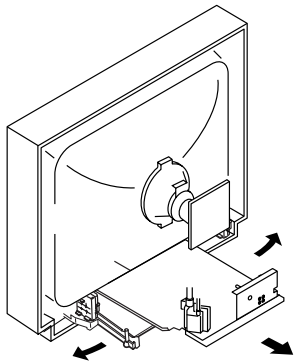
2-3. REAR COVER REMOVAL



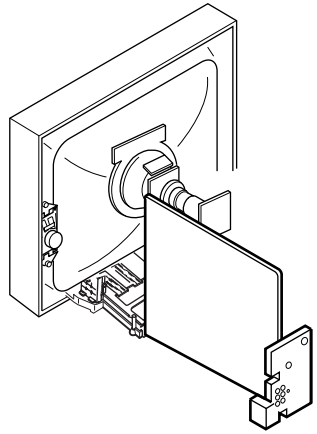
2-4. SPEAKER REMOVAL



2-5. CHASSIS ASSY REMOVAL



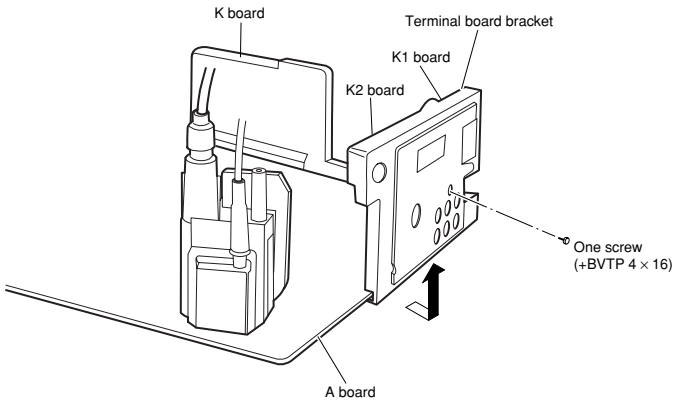
2-6. SERVICE POSITION



Caution: Do not take out CRT support block while TV set in standing position.

Note: Undress necessary wires that creates tension while placing the chassis into Service Position.

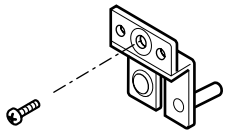
2-7. TERMINAL BRACKET AND K, K1, K2 BOARDS REMOVAL



2-8. REPLACEMENT OF PARTS

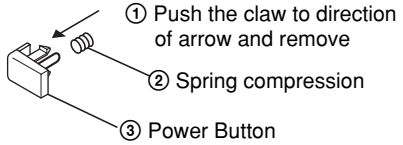
For replacements of light guide,unscrew them, exchange with new parts and fix them with screws respectively.

2-8-1. Replacement of Light Guide



One screw
(+BVTP 3 × 12)

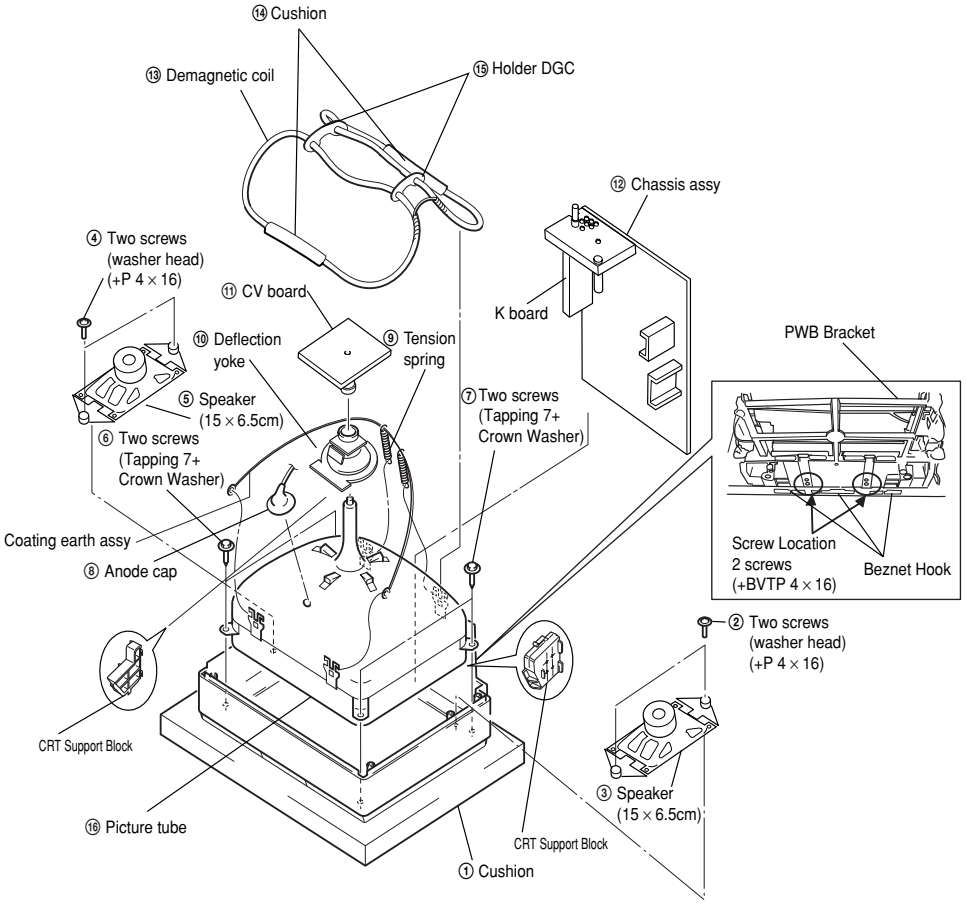
2-8-2. Replacement of Power Button



2-9. PICTURE TUBE REMOVAL

Note:

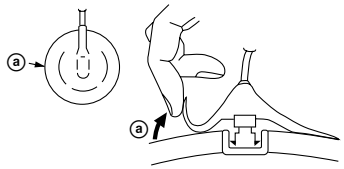
- Please make sure the TV set is not in standing position before removing necessary CRT support located on bottom right and left.


⑭ Cushion
⑬ Demagnetic coil
⑮ Holder DGC
⑫ Chassis assy
④ Two screws (washer head) (+P 4 × 16)
⑪ CV board
K board
PWB Bracket
⑩ Deflection yoke
⑨ Tension spring
⑤ Speaker (15 × 6.5cm)
⑦ Two screws (Tapping 7+ Crown Washer)
⑥ Two screws (Tapping 7+ Crown Washer)
Coating earth assy
⑧ Anode cap
Screw Location 2 screws (+BVTP 4 × 16)
Beznet Hook
② Two screws (washer head) (+P 4 × 16)
CRT Support Block
③ Speaker (15 × 6.5cm)
⑯ Picture tube
CRT Support Block
① Cushion

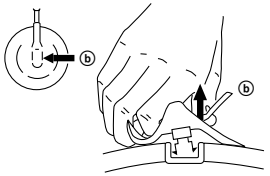
• REMOVAL OF ANODE-CAP

NOTE : After removing the anode, short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT.

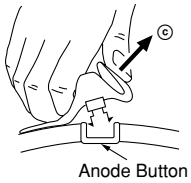
• REMOVING PROCEDURES



① **Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.**



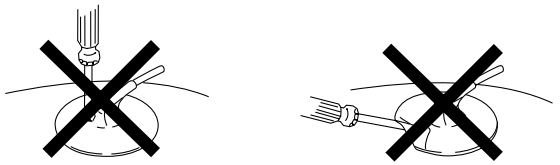
② **Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.**



③ **When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ.**

- **HOW TO HANDLE AN ANODE-CAP**

① **Do not damage the surface of anode-caps with sharp shaped objects.**
② **Do not press the rubber too hard so as not to damage the inside of anode-cap. A metal fitting called the shatter-hook terminal is built into the rubber.**
③ **Do not turn the foot of rubber over too hard. The shatter-hook terminal will stick out or damage the rubber.**



SECTION 3
SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switches should be set as follows unless otherwise noted:

PICTURE control ..... normal
BRIGHTNESS control ..... normal

Perform the adjustments in the following order :

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note : Test Equipment Required.

1. Pattern Generator
2. Degausser
3. Oscilloscope

Preparation :

In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.

Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input a white signal with the pattern generator.
   Contrast } normal
   Brightness }
2. Set the pattern generator raster signal to a green raster.
3. Move the deflection yoke to the rear and adjust with the purity control so that the green is at the center and the blue and the red take up equally sized areas on each side. (See Figures 3-1 through 3-4.)
4. Move the deflection yoke forward and adjust so that the entire screen is green. (See Figure 3-1.)
5. Switch the raster signal to blue, then to red and verify the condition.
6. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws and DY spacers.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Figure 3-4.)

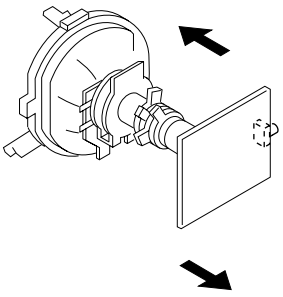


Fig. 3-1

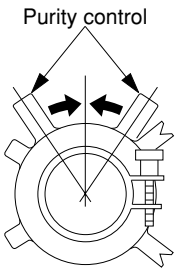


Fig. 3-2

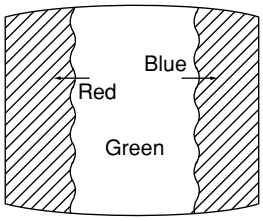


Fig. 3-3

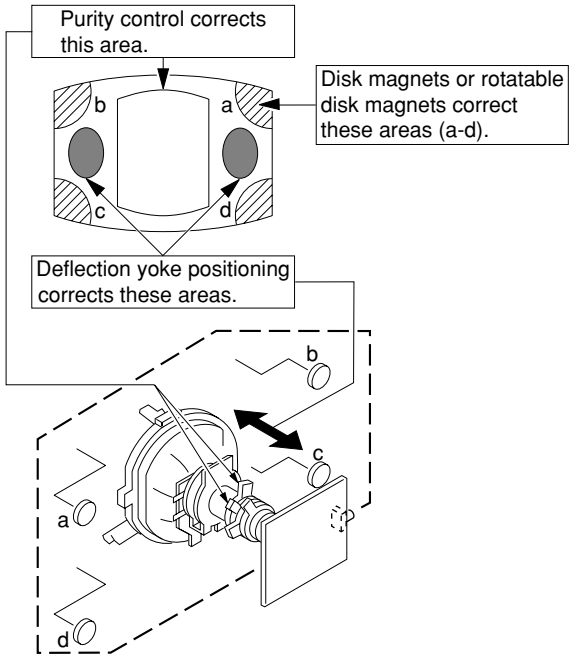


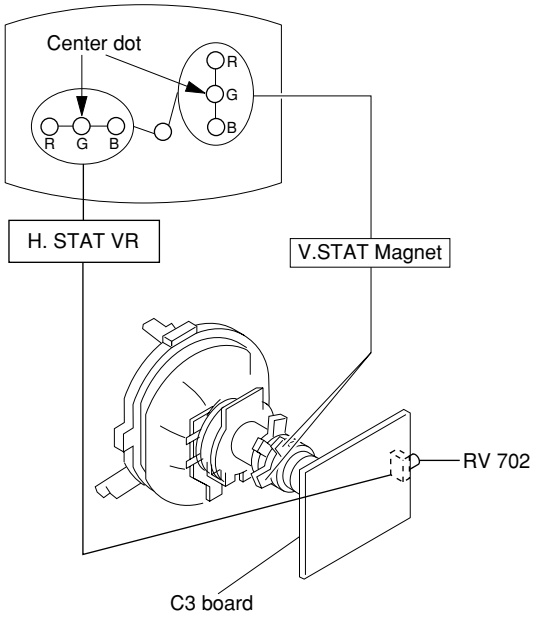
Fig. 3-4

3-2. CONVERGENCE

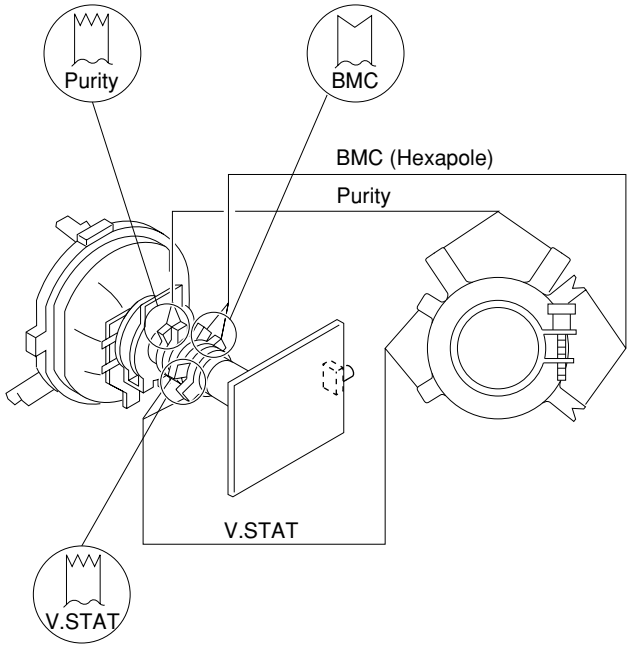
Preparation :

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Receive dot/hatch signal.
- Pic mode: Soft.

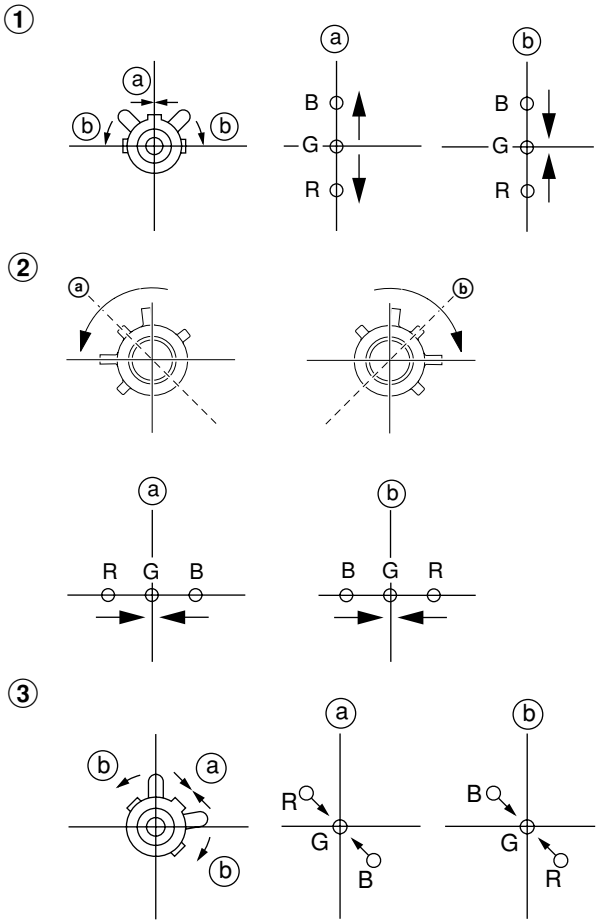
(1) Horizontal and Vertical Static Convergence



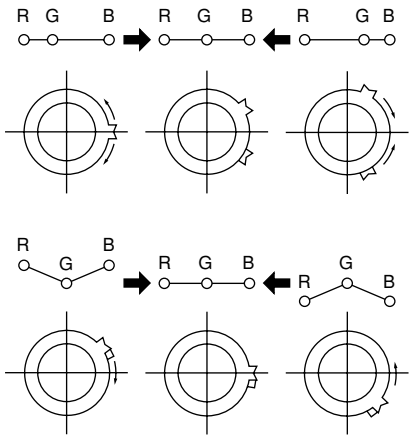
1. (Moving vertically), adjust the V.STAT magnet so that the red, green and blue dots are on top of each other at the center of the screen.
2. (Moving horizontally), adjust the H.STAT VR control so that the red, green and blue dots are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green and blue dots together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other, so be sure to perform adjustments while tracking.)



- Operation of V. Stat magnet
  If the V. Stat magnet is moved in the "a" and "b" arrows, the red, green and blue dots move as shown below.



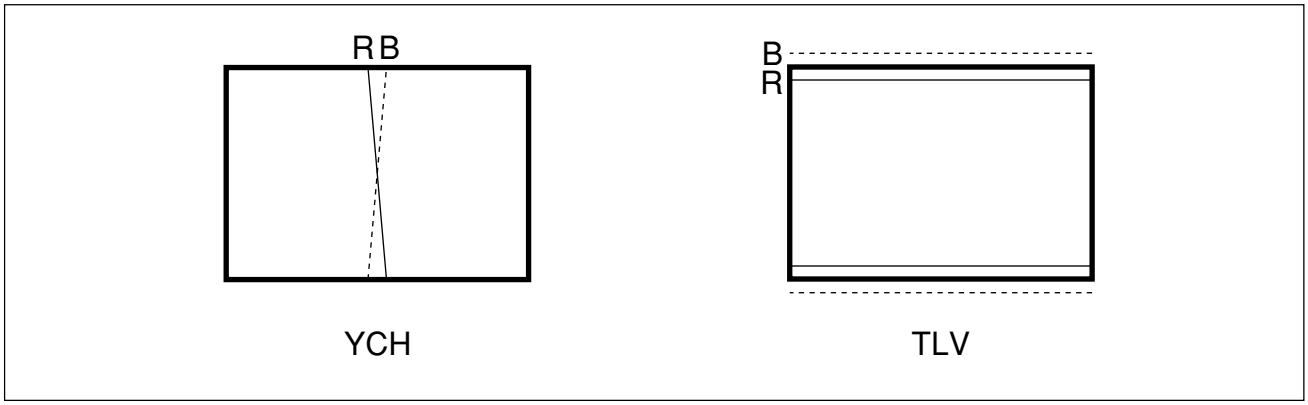
④ BMC (Hexapole) Magnet.
If the red, green and blue dots are not balanced or aligned, then use the BMC magnet to adjust in the manner described below.



(2) Dynamic Convergence Adjustment

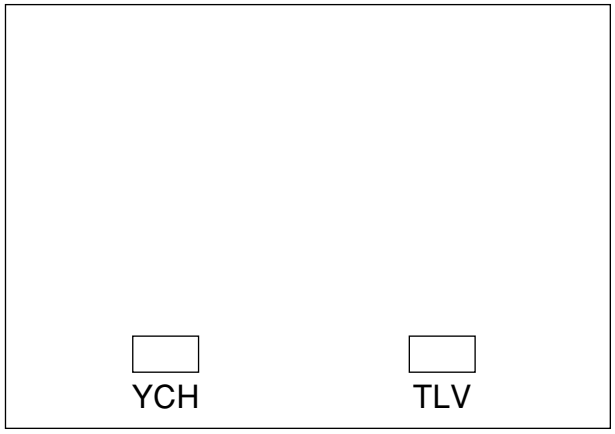
Preparation:

Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence

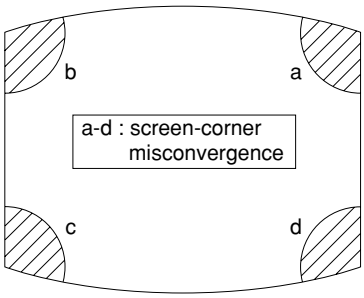


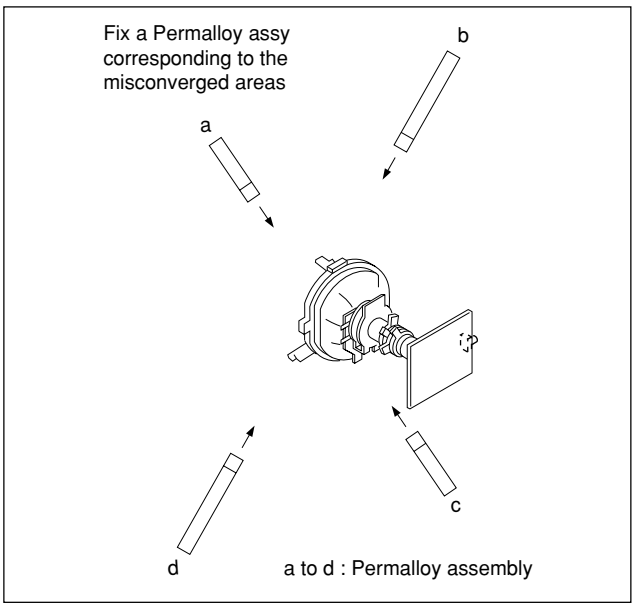
TLH	Insert	TLH	Correction Plate to DY Pocket (Left or Right)
YCH	Rotate	YCH	VOL on DY
TLV	Rotate	TLV	VOL ON DY
XCV	Rotate	XCV	Adj core on DY

ON DY:



(3) Screen-corner Convergence

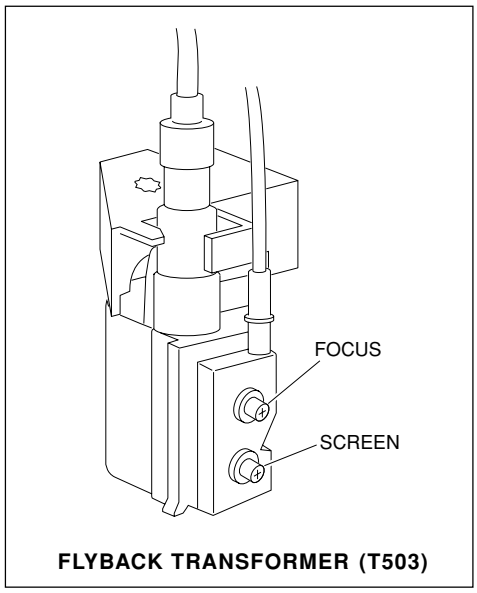




3-3. FOCUS ADJUSTMENT

FOCUS adjustment should be completed before W/B adjustment.

1. Receive digital monoscope pattern.
2. Set "Picture Mode" to "DYNAMIC".
3. Adjust focus VR so that the center of screen becomes just focus.
4. Change the receiving signal to white pattern and blue back.
5. Confirm magenta ring is not noticeable. Incase magenta is very obvious, adjust focus VR to take balance of magenta ring and focus.

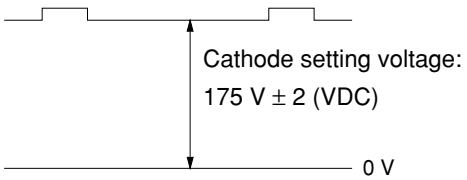


FLYBACK TRANSFORMER (T503)

3-4. G2 (SCREEN) AND WHITE BALANCE ADJUSTMENTS

1. G2 (SCREEN) ADJUSTMENT

1) Set the PICTURE to normal.
2) Put to VIDEO input mode without signals.
3) Connect R, G and B of the C board cathode to the oscilloscope.
4) Adjust BRIGHTNESS to obtain the cathode voltage to the value below.
5) Adjust G2 (screen) on the FBT until picture shows the point before cut off.

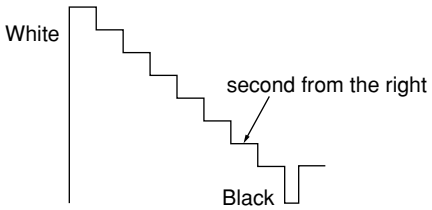


2.a) WHITE BALANCE ADJUSTMENT

1) Set to Service Mode (Refer Section 4-1: ADJUSTMENTS WITH COMMANDER).
2) Input white raster signal.
3) Set 49 (ABL) and IF (VP2) service mode to 00.
4) Set Picture to DYNAMIC.
5) Select OB (RDR) with [1] and [4], and set the level to 1F (Dynamic), and 24 (others) with [3] and [6] for best white balance.
6) Select OC 'GDR' and OD 'BDR' with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
7) Write into the memory by pressing [MUTING] then [0].
8) Set back 49 'ABL' and IF 'VP2' service mode to original data.

2.b) SUB BRIGHT ADJUSTMENT

1) Set to service mode.
2) Set 49(ABL) and IF (VP2) service mode to 00
3) Input a staircase signal of black to white from the pattern generator.
4) BRIGHTNESS .... 50%.
   PICTURE ..... MINIMUM
5) Select OE 'SBR' with [1] and [4], and adjust OE 'SBR' level with [3] and [6] so that the second stripe from the right is dimly lit.
6) Write into the memory by pressing [MUTING] then [0].
7) Set back 49 (ABL) and IF (VP2) service mode to original data.



SECTION 4
CIRCUIT ADJUSTMENTS

4-1. ADJUSTMENT WITH COMMANDER

Service adjustments to this model can be performed using the supplied Remote Commander RM-969

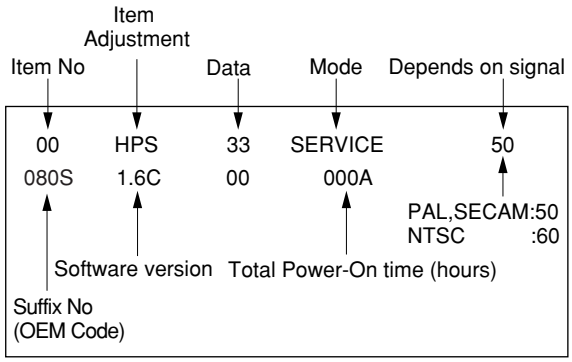
a. ENTERING SERVICE MODE

With the unit on standby

→ [DISPLAY] → [5] → [VOL (+)] → [POWER]

This operation sequence puts the unit into service mode.

The screen display is :



b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press [POWER] button on the commander), then press [POWER] button again, hereupon it becomes TV mode.

c. METHOD OF WRITE INTO MEMORY

1) Set to Service Mode.
2) Press [1] (UP) and [4] (DOWN), to select the adjustment.
4) Press [MUTING] button to indicate WRITE on the screen.
5) Press [0] button to write into memory.

d. MEMORY WRITE CONFIRMATION METHOD

1) After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again to confirm adjustments were made.

[1], [4]	Select the adjustment item.
↓	
[3], [6]	Raise/lower the data value.
↓	
[MUTING]	Writes.
↓	
[0]	Executes the writing.

e. OTHER FUNCTION VIA REMOTE COMMANDER

[7], [0]	All the data becomes the values in memory.
[8], [0]	All user control goes to the standard state.
[5], [0]	Service data initialization (Be sure not to use usually.)
[2], [0]	Copy and write all data.
[MUTE], [0]	Write 50Hz adjustment data to 60Hz or vice versa.

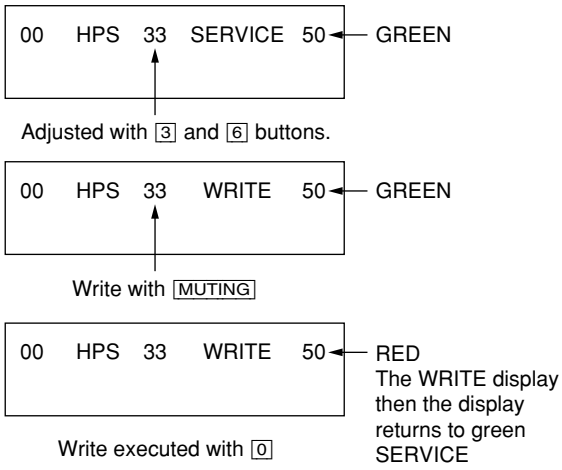
4-2. ADJUSTMENT METHOD

Item Number 00 HPS

This explanation uses H Shift as an example.

1. Select "00 HPS" with the [1] and [4] buttons.
2. Raise/lower the data with the [3] and [6] buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the [MUTING] button. (The display changes to WRITE.)
5. Execute the writing with the [0] button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)

Example on screen display :-


00 HPS 33 SERVICE 50
GREEN
Adjusted with 3 and 6 buttons.
00 HPS 33 WRITE 50
GREEN
Write with MUTING
00 HPS 33 WRITE 50
RED
The WRITE display then the display returns to green SERVICE
Write executed with 0

Use the same method for all Items. Use [1] and [4] to select the adjustment item, use [3] and [6] to adjust, write with [MUTING], then execute the write with [0].

Note : 1. In [WRITE], the data for all items are written into memory together.
2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

Functionality No.		Init.	Range	Function	Table & Note	Register No. (Bit Range)	Device Name (Slave Address)
00	HPS	2A	3F	H Shift	50/60Hz	03 (5-0)	TDA8843/44(8A)
01	HSZ	1F	3F	H Size	50/60Hz	04 (5-0)	
02	PAP	1F	3F	Pin Amplitude	50/60Hz	05 (5-0)	
03	CPN	1F	3F	Corner Pin	50/60Hz	06 (5-0)	
04	TLT	1F	3F	Tilt	50/60Hz	07 (5-0)	
05	VSL	20	3F	V Slope	50/60Hz	08 (5-0)	
06	VAP	0F	3F	V Amplitude	50/60Hz	09 (5-0)	
07	SCO	0F	3F	S Correction	50/60Hz	0A (5-0)	
08	VPS	1F	3F	V Shift	50/60Hz	0B (5-0)	
09	VZM	19	3F	Vertical Zoom		16 (5-0)	
0A	VSC	1F	3F	Vertical Scroll	50/60Hz	17 (5-0)	
0B	RDR	1F/24	3F	R Drive	Dynamic/Others	0C (5-0)	
0C	GDR	25	3F	G Drive	Dynamic/Others	0D (5-0)	
0D	BDR	25	3F	B Drive	Dynamic/Others	0E (5-0)	
0E	SBR	58	7F	Sub Brightness		10 (5-0)	
0F	PMX	20	3F	Picture Maximum Data	TV/Video/Teletext	12 (5-0)	
10	PMI	04	3F	Picture Minimum Data		12 (5-0)	
11	SHU	07	0F	Sub Hue	TV/Video	02 (5-0)	
12	SSH	01/03	03	Sub Sharpness	TV/Video	0F (5-0)	
13	SC1	20	3F	Sub Color Lower	50/60Hz	11 (5-0)	
14	SC2	08/0B	3F	Sub Color Higher	50/60Hz	11 (5-0)	
15	FO	00	03	01 Time Constant	TV/Video/Teletext	00 (3-2)	
16	AGT	0	3F	AGC Take Over	TV/Video/Teletext	13 (5-0)	
17	VSW	0/1/0	01	Video Mute Switch	TV/Video/Teletext	13 (6)	
18	FOR	03	03	Forced Field Frequency		01 (7-6)	
19	DL	0	01	De-interlace		01 (5)	
1A	POC	0	01	Fixed 01 Synchro. Mode		01 (3)	
1B	COR	1/0/0	01	Noise Coring	TV/Video/Teletext	10 (6)	
1C	RBL	0	01	RGB Blanking	TV/Video/Teletext	10 (7)	
1D	YDL	06/0C/0A	0F	Y-Delay	PAL/NTSC/SECAM	1A (7-4)	
1E	VP1	20	FF	Extra Bits (see below)			
1F	VP2	01	FF	Extra Bits (see below)			
20	VP3	0F	FF	Extra Bits (see below)			
21	WST	15	FF	W/G Stereo Threshold			MSP3417G(80)
22	WBT	EC	FF	W/G Bilingual Threshold			
23	WLL	05	FF	W/G Monaural Threshold			
24	WAC	01	0F	W/G Agreement count			
25	WDL	30	FF	W/G Search Delay			
26	NDL	20	FF	NICAM Search Delay			
27	SDL	10	FF	Stereo Status Read Delay			
28	AGC	01	01	AGC Switch auto/constant		BB (7)	
29	REL	28	3F	AGC Gain at Constant Mode		BB (6-1)	
2A	CRM	0	01	Carrier Muting on/off		BB (9)	
2B	ACO	1	01	Audio Clock-out on/off		83 (5)	
2C	FP	1B	7F	FM Prescale for B/G, I, D/K		0E (7-0)	
2D	FPM	32	7F	FM Prescale for M		0E (7-0)	
2E	FH	36	7F	FM Prescale for HDEV (non-M)		0E (7-0)	
2F	FHM	65	7F	FM Prescale for HDEV (M)		0E (7-0)	

Adjustment Item Table

Functionality No.		Init.	Range	Function	Table & Note	Register No. (Bit Range)	Device Name (Slave Address)
30	WGP	1C	7F	W/G Prescale		0E (7-0)	
31	NIP	7F	7F	NICAM Prescale		10 (7-0)	
32	ERR	50	FF	Auto FM Switch Threshold		21 (10-3)	
33	VOL	73	7F	DFP Volume Maximum		00 (14-8)	
34	ING	04/01/01	0F	Input Gain	M/System/non-M/Video	01 (3-0)	TDA7438(88)
35	VOM	01	3F	Volume Output Gain	M System only	02 (5-0)	
36	BCS	01	03	Bass Center Shift			
37	TCS	01	03	Treble Center Shift			
38	TXH	2A	FF	Horizontal Display Position			SAA5264(58)
39	TXV	27	3F	Vertical Display Position (line offset from V-sync)			
3A	THD	00	7F	H-sync Active Edge Shift			
3B	TVD	3F	7F	V-sync Active Edge Shift			
3C	HPL	01	01	H-sync Polarity Configuration	00 : Positive, 01 : Negative		
3D	VPL	01	01	V-sync Polarity Configuration	00 : Positive, 01 : Negative		
3E	FPL	01	01	Field Polarity Configuration	00 : V-sync second half line, 01: V-sync first half line		
3F	FMD	00	03	Force Mode	00 : Auto, 01 : Default, 02 : Fastext, 03 : Top Mode		
40	TBR	08	0F	Set Teletext RGB Brightness			
41	NOP	01	0F	National Option Table Configuration			
42	TCH	01	03	Twisted Character Set Configuration			
43	BKP	00	3F	Picture Data at Blanking OFF			Other Control
44	ODL	12	FF	Power ON Delay			
45	OSH	0A	3F	OSD H Position			
46	TSY	00	03	TV System at Auto Preset	00 : B/G, 01 : I, 02 : D/K, 03 : M		
47	DKS	01	01	D/K Stereo enable/disable			
48	MUT	00	01	Muting on/off at No Sync			
49	ABL	01	01	Bright ABL Switch			
4A	SCM	01	01	SECAM Trap active/inactive			
4B	SLS	01	01	Activate SL. OR.IFI Sync			
4C	SSV	02	07	Space Sound Volume Step Up			
4D	VPW	35	7F	Timer of Video Processor start up wait			
4E	OP1	AF	FF	Optional Flags 0 (see below)			
4F	OP2	8F	FF	Optional Flags 1 (see below)			
50	OP3	10	FF	Optional Flags 2 (see below)			

NOTE:

Bold item are fixed data.

- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory.
  In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

ITEM INFORMATION

No. 1E VP1

Item	-	-	BCO	OSO	SBL	HBL	FCO	FFI
KV-HA21M83A	0	0	0	0	0	0	0	0

BCO	Switch-on behaviour 1=Switch -on of picture via internal delay 0=Without delay	00(4)
OSO	1=Switch off in vertical overscan 0=Switch-off undefind	18(7)
SBL	Service blanking 1= on 0= off	0B(7)
HBL	RGB Blanking Mode 1 = wide blanking, 0 = normal blanking	02(7)
FCO	Forced Color-on 1=no colour killer 0=normal colour killer function	1B(0)
FFI	Fast filler IF-PLL 1=increased time constant 0=normal time constant	1A(1)

No. 1F VP2

Item	-	-	MAT	DS	DSA	EBS	BLS	BKS
KV-HA21M83A	0	0	0	0	0	0	0	1

MAT	PAL-SECAM-/NTSC Matrix 1 =PAL matrix, 0=adapted to standard	0E(7)
DS	Dynamic skin control on/off 1= on 0= off	1A(3)
DSA	Dynamic skin control angle 1=correction angle 117 degrees 0=correction angle 123 degrees	1A(2)
EBS	Extended Blue Stretch 1= on 0= off	1A(0)
BLS	Blue stretch 1= on 0= off	18(4)
BKS	Black stretch 1= on 0= off	18(3)

No. 20 VP3

Item	BB	AKB	BPS	CB	ACL	CL2	CL1	CL0
KV-HA21M83A	0	0	0	0	1	0	0	0

BB	Blue back when no video signal is identified 1= on 0= off	18(0)
AKB	Black current stabilisation 1=not active 0=active	02(6)
BPS	Bypass of chroma base-band delay line 1=bypassed 0=active	19(6)
CB	Chroma bandpass centre frequency 1= 1.1x Fsc 0=Fsc	18(5)
ACL	Automatic colour limiting 1= active 0= not active	19(5)

CL2	CL1	CL0	Cathode Drive amplitude
0	0	0	57V
0	0	1	63V
0	1	0	70V
0	1	1	77V
1	0	0	84V
1	0	1	91V
1	1	0	99V
1	1	1	107V

No. 4E OP1

Item	HA ME VOL	AV Input		COMB	B/G	I	D/K	M
KV-HA21M83A	1	0	1	0	1	1	1	1

AV Input — 00 = no AV Input model; 01 = 1 AV Input model; 10 = 2 AV Input model; 11 = Not available

COMB (for NTSC model) — 1 = Enable external comb filter, 0 =Disable external comb filter

Other optional function will be enabled if the corresponding bit is set to 1.

No. 4F OP2

Item	No NICAM	US ST	HDEV	I V-Curve	XTAL SEL		SECAM	2nd Lang.
KV-HA21M83A	1	0	0	0	1	1	1	1

No NICAM — 1 = NICAM search is disable in any TV system, 0 = NICAM search operates

US ST — (Reserved for NTSC model)

1 V-Curve (for monaural model) — 1 = using common volume curve for every mode and every TV system; 0 = another volume curve available for video mode and M system

XTAL SEL — 00 = only 4.43 XTAL; 01 = only 3.58 XTAL; 10 = not used; 11 = both 4.43 and 3.58 XTAL

Other optional function will be enabled if the corresponding bit is set to 1.

No. 50 OP3

Item	Pict Rot.	Auto TV Sys.	No Bal.	SPC SOUND	Korean ST	VM	H.K. Bil.	Thai Bil.
KV-HA21M83A	0	0	0	1	0	0	0	0

No Bal. (for AV stereo model) — 1 = no balance in analog select items, 0 = balance included

SPC SOUND — 1 = Space Sound available, 0 = not available

Korean ST — (Reserved for NTSC model)

H.K. Bil. (for monaural model) — 1 = NICAM bilingual available (No NICAM stereo), 0 = not available

Other optional function will be enable if the corresponding bit is set to 1.

OPERATION GUIDE

SERVICE MODE

How to set up new NVM (or initialize already written one)
(1) AC ON
(2) Enter Service Mode - describing below how to enter
(3) Push the commander button “5” and “0” sequentially (only set initial data into RAM, but not write them into NVM yet)
(4) Push the commander button “2” and “0” sequentially (copy the data into all NVM area - all wide modes and 50/60Hz respectively)
(5) Push the commander button “8” and “0” sequentially (initialize user data, select program 1 and exit Service Mode)
(6) Select TV system and execute Auto Preset

How to enter Service Mode
- At power ON, push the commander button “test” and “TV ON” sequentially
- At stand-by, push the commander button “display”, “5”, “vol +” and “power” sequentially

How to exit Service Mode
- Push the commander button “other ON” or power (AC) OFF

How to increment/decrement items and data
- Items : push the commander button “1” / “4”
- Data : push the commander button “3” / “6” (not write into NVM)

Other operations
- Write data into NVM - push the commander button “mute” and “0” sequentially
- Read data from NVM - push the commander button “7” and “0” sequentially
- Copy 50Hz data into 60Hz area - push the commander button “display” and “0” sequentially

SELF DIAGNOSIS MODE

How to enter Self Diagnosis Mode
- At stand-by, push the commander button “display”, “5”, “vol-” and “power” sequentially

How to exit Self Diagnosis Mode
- Push the commander button “other ON” or power (AC) OFF

Other operations
- Clear data and Write into NVM - push the commander button “8” and “0” sequentially

HOTEL TV MODE

How to enter Hotel TV Mode ON stage
- At stand-by, push the commander button “display”, “MUTE”, “vol +” and “power” sequentially
- The Hotel TV setup display, where the maximum level of the volume can be applied (=35 or above)
- Write data into NVM - push the commander button “mute” and “0” sequentially

How to enter Hotel TV Mode OFF stage
- At stand-by, push the commander button “display”, “MUTE”, “vol -” and “power” sequentially
- Write data into NVM - push the commander button “mute” and “0” sequentially

Modification Note

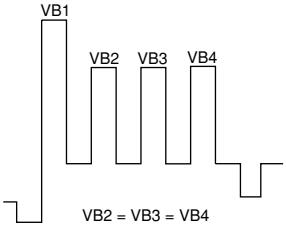
The item including the new addition is yellow.

1. The flag was added to bit 7 of OP1. This is the flag which chooses the volume curve used by HA (ME) model. (V2. IC)

4-3. PICTURE QUALITY ADJUSTMENT

SUB COLOR ADJUSTMENT

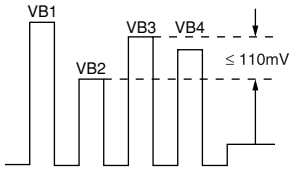
1. Select Video.
2. Input a PAL color-bar.
3. Set to the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN300, A board.
5. Set to Service Mode and select 13 'SC1' with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
6. Press [MUTING] → [0] of the commander to write the data.
7. Adjust 13 'SC1' as step 2 to 5 when receiving NTSC color-bar.



VB2 = VB3 = VB4 (Difference is within 70mV)

SUB HUE ADJUSTMENT

1. Select Video.
2. Input a NTSC 3.58, color-bar into Video/TV mode.
3. Set the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN300, A board.
5. Select 11"SHU" with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6] .



VB1 = VB2 = VB3 = VB4

   The highest level of VB1,VB2,VB3,VB4 must be aligned at the same line. Ideal difference level between VB2 and VB3 should be within ± 110mV.
6. Press [MUTING] → [0] of the commander to write the data.
7. Select TV channel with NTSC 3.58 and repeat 3 to 5.
8. Press [MUTING] → [0] of the commander to write the data.
9. Single system model with NTSC 4.43, select TV channel with NTSC 4.43 and repeat 3 to 5.

4-4. DEFLECTION ADJUSTMENT

NORMAL MODE (50Hz)

1. Set to Service mode.
2. Input PAL color bar.
3. Using the [1] and [4] button, select category GEO (Service Mode).
4. Raise/lower the data using the [3] and [6] buttons.
   Select and adjust the following items to obtain optimum image.

Service Item

GEO :	00	HPS	H POSITION
	01	HSZ	H SIZE
	02	PAP	PIN AMPLITUDE
	03	CPN	CORNER PIN
	04	TLT	TILT
	05	VSL	V SLOPE
	06	VAP	VERTICAL AMPLITUDE
	07	SCO	S CORRECTION
	08	VPS	V SHIFT

NORMAL MODE (60Hz)

5. Input 525/60Hz signal.
6. Using the [1] and [4] buttons select category GEO (Service Mode).
7. Select and adjust the following items to obtain obtimum image.
   Raise/lower the data with the [3] and [6] buttons.

Service Item

GEO :	00	HPS	H POSITION
	01	HSZ	H SIZE
	02	PAP	PIN AMPLITUDE
	03	CPN	CORNER PIN
	04	TLT	TILT
	05	VSL	V SLOPE
	06	VAP	VERTICAL AMPLITUDE
	07	SCO	S CORRECTION
	08	VPS	V SHIFT

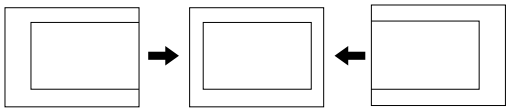
4-5. A BOARD ADJUSTMENT AFTER IC003 (MEMORY) REPLACEMENT

1. Enter to Service Mode.
2. Press commander buttons [5] and [0] (Data Initialize), and [2] and [0] (Data Copy) to initialize the data.
3. Call each item number and check if the respective screen shows the normal picture.
   In cases where items are not well adjusted, rectify the fine adjustment.
   Write the data per each item number ([MUTING] +[0]).
4. Select item numbers 4E 'OP0', 4F 'OP1', 50 'OP2' and respectively set the bit per model with command buttons [3] and [6] .
5. Press commander buttons [8] and [0] (Test Normal) to return to the data that was set on the shipment from the factory. (This will also cancel Service Mode.)

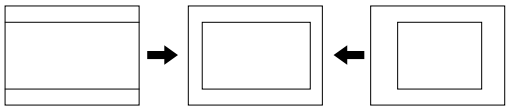
4-6. PICTURE DISTORTION ADJUSTMENT

Item Number 00 – 08

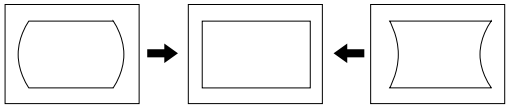
00 HPS (H POSITION)



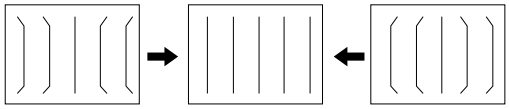
01 HSZ (H SIZE)



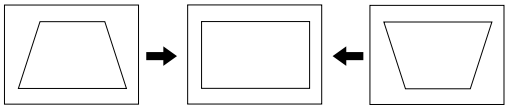
02 PAP (PIN AMPLITUDE)



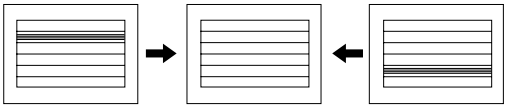
03 CPN (CORNER PIN)



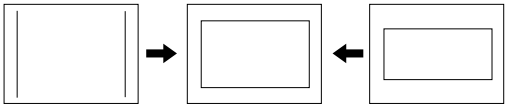
04 TLT (TILT)



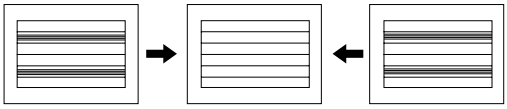
05 VSL (V SLOPE)



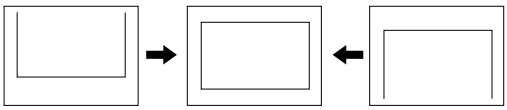
06 VAP (VERTICAL AMPLITUDE)



07 SCO (S CORRECTION)



08 VPS (V SHIFT)



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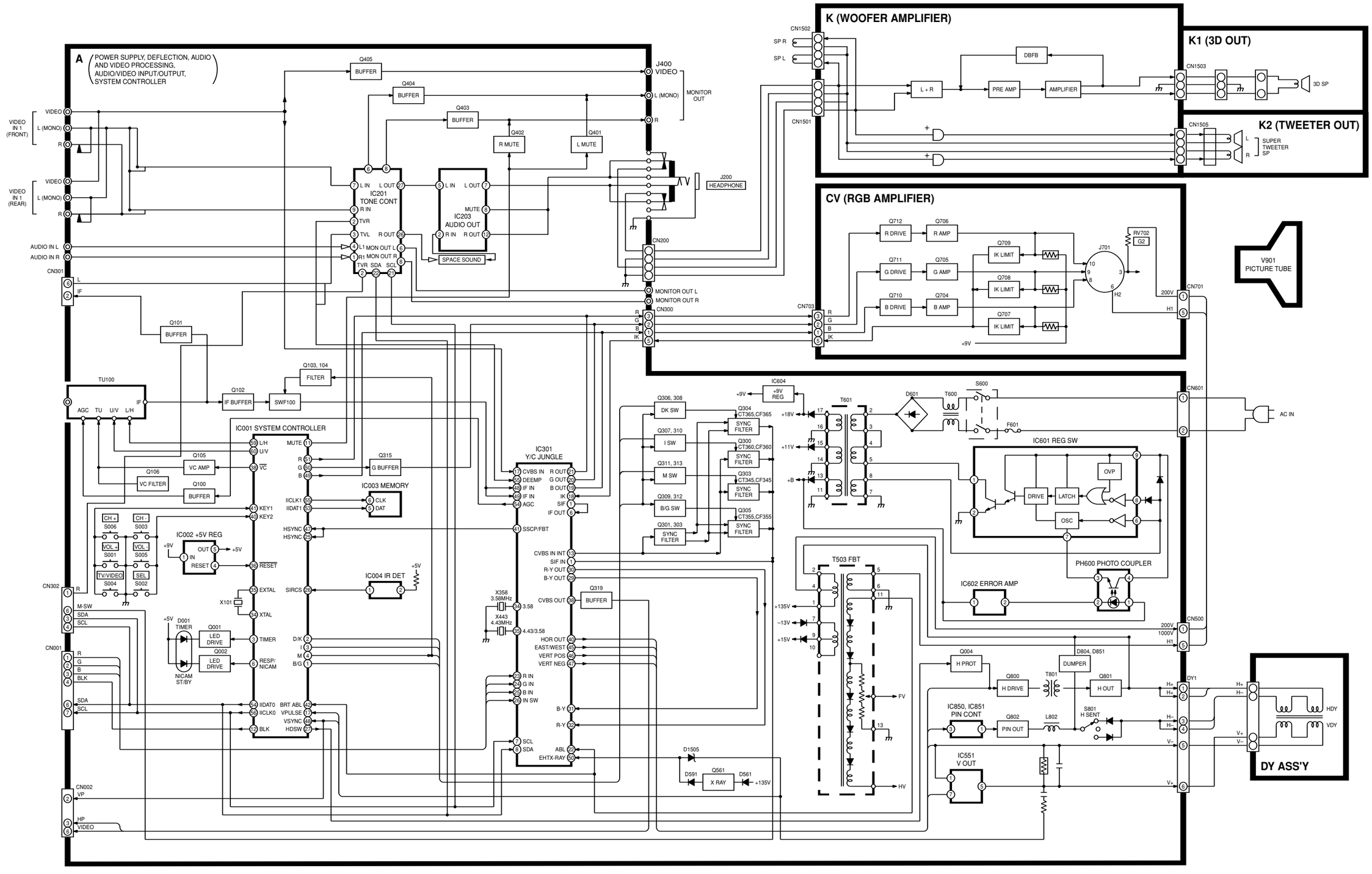
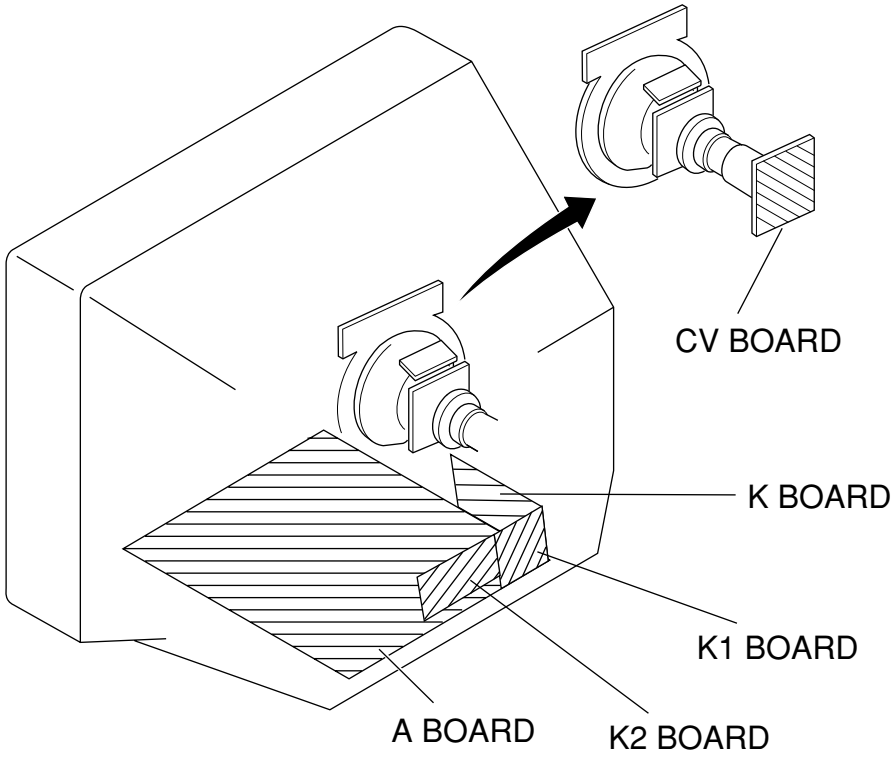
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM



5-2. CIRCUIT BOARDS LOCATION



5-3. SCHEMATIC DIAGRAM

Note:

- All capacitors are in µF unless otherwise noted.
- All electrolytic capacitors are rated at 50V unless otherwise noted.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance which does not have rating electrical power is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W (CHIP: 1/10W)

- : nonflammable resistor.
- △ : internal component.
- : panel designation or adjustment for rrepair.
- All variable and adjustable resistors have characteristic curve B unless otherwise noted.
- **Readings are taken with a color-bar signal input.**
  no mark : COMMON
  ( ) : PAL
  [ ] : NTSC 3.58
- **Readings are taken with a 10 MΩ digital multimeter.**
- **Voltage are dc with respect to ground unless otherwise noted.**
- **Voltage variations may be noted due to normal production tolerances.**
- **All voltage are in Volt.**
- **✻ : Cannot be measured.**
- **Circled numbers are waveform references.**
- **: B +bus.**
- **: B –bus.**
- **: signal path.**

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ✻	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The component identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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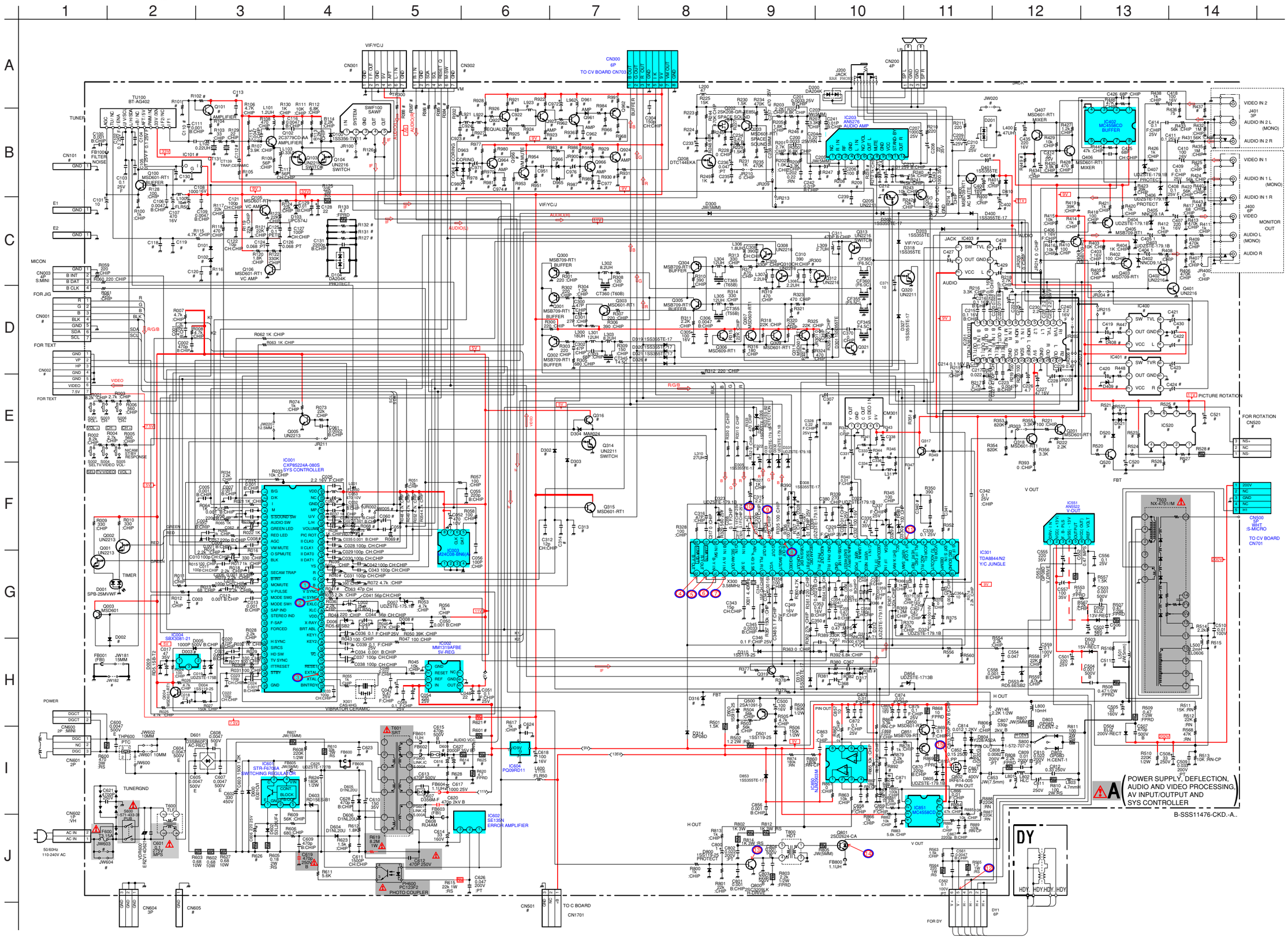
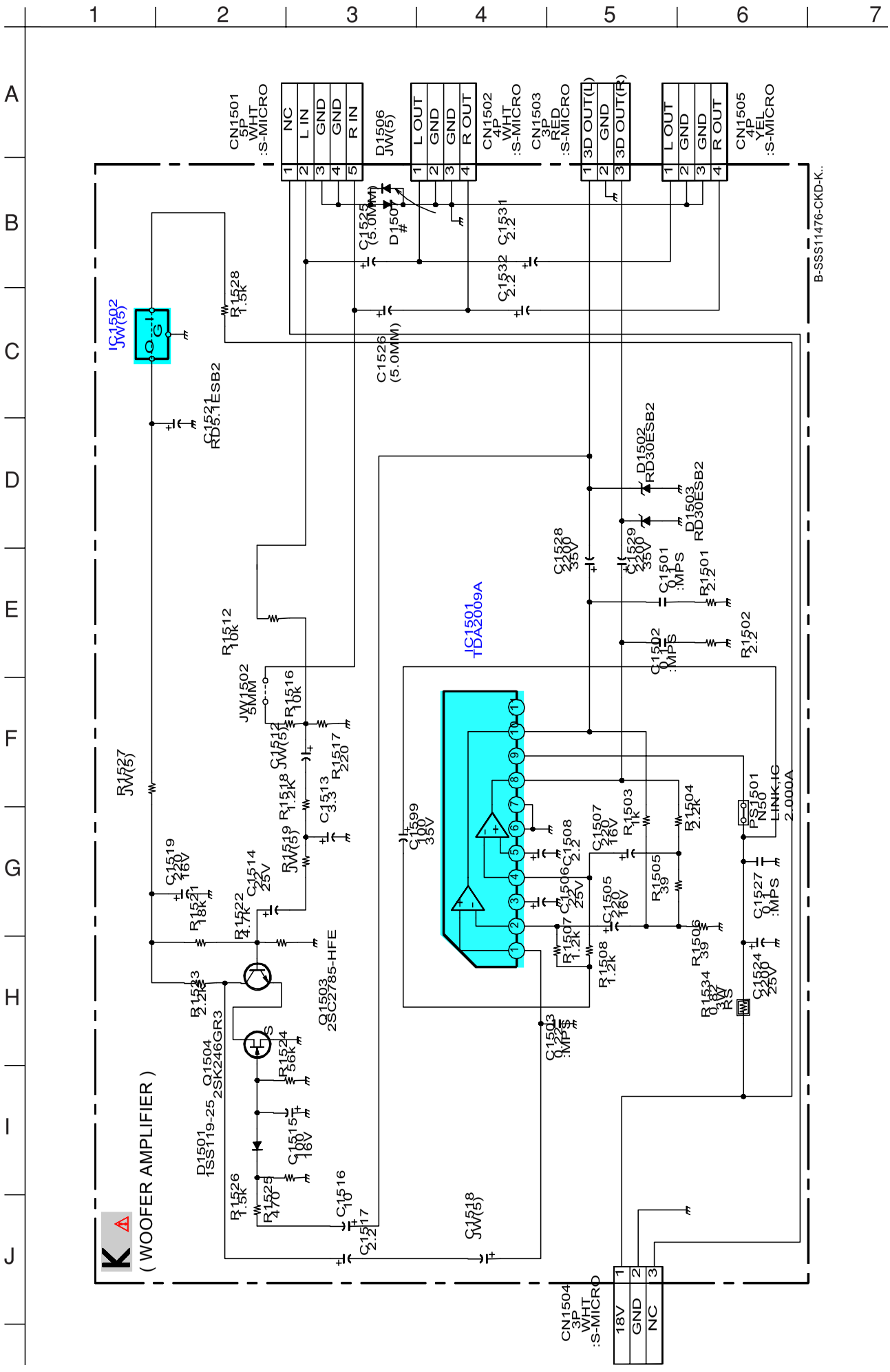
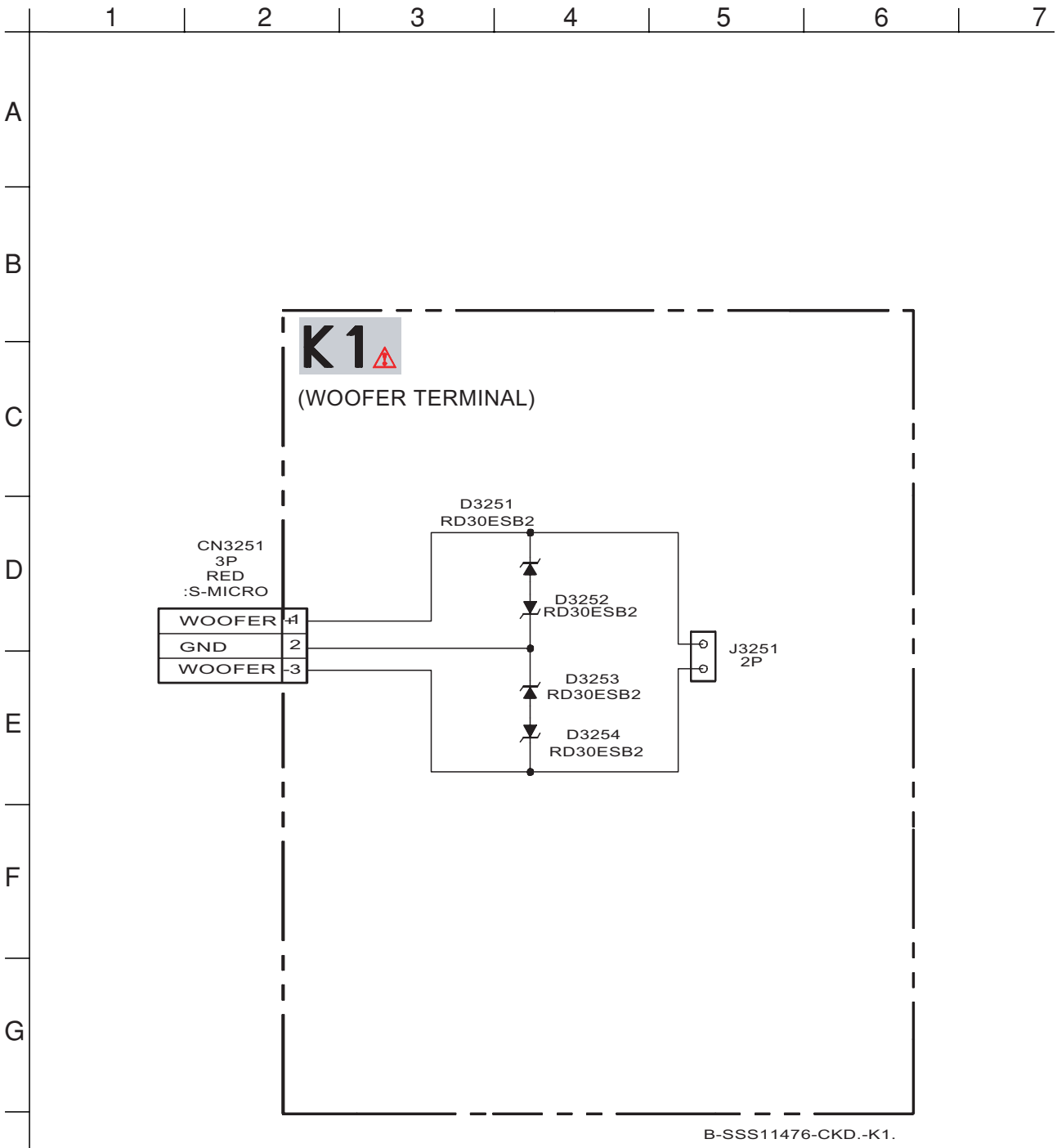
(1) A Board Schematic Diagram



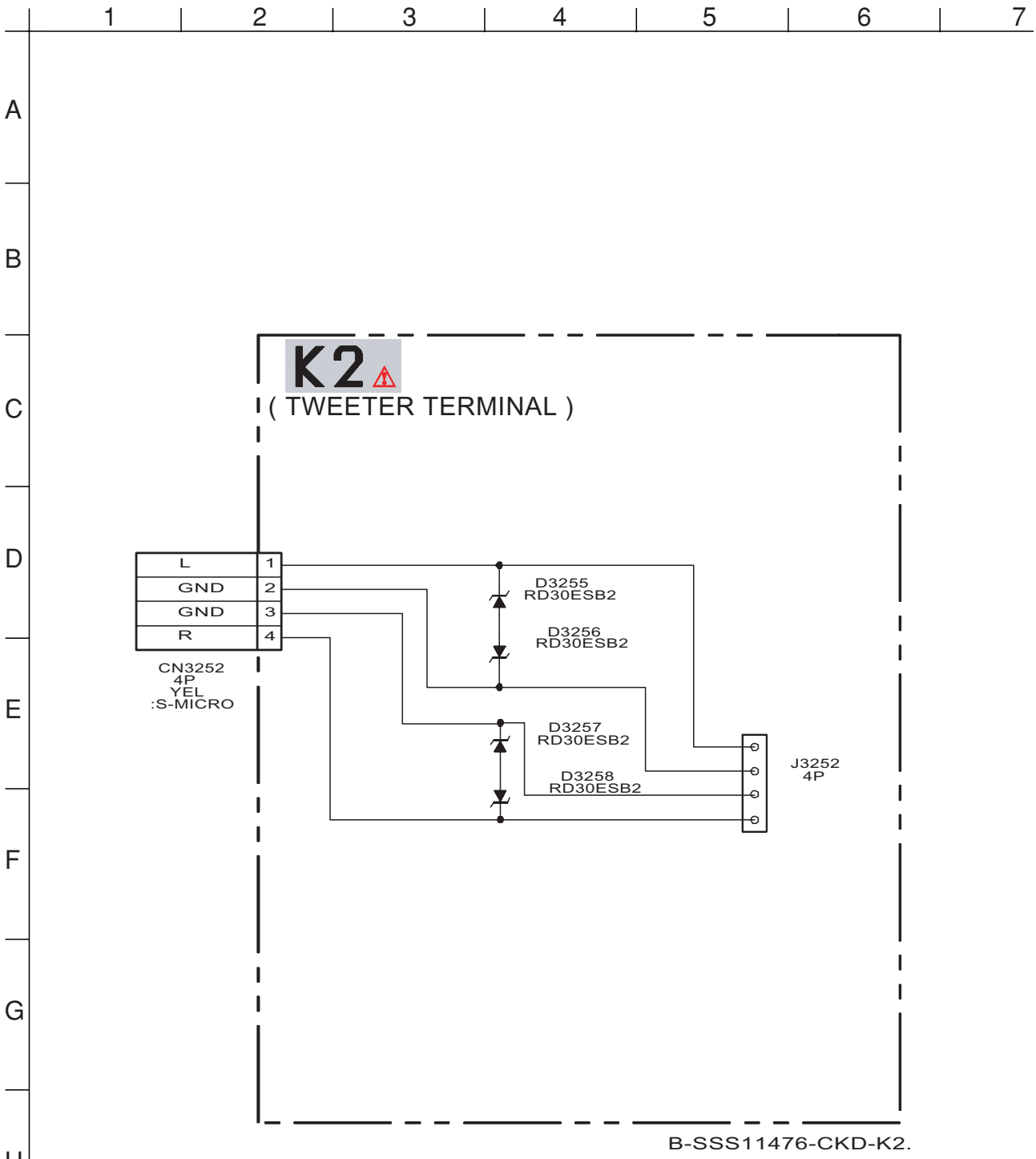
(2) K Board Schematic Diagram



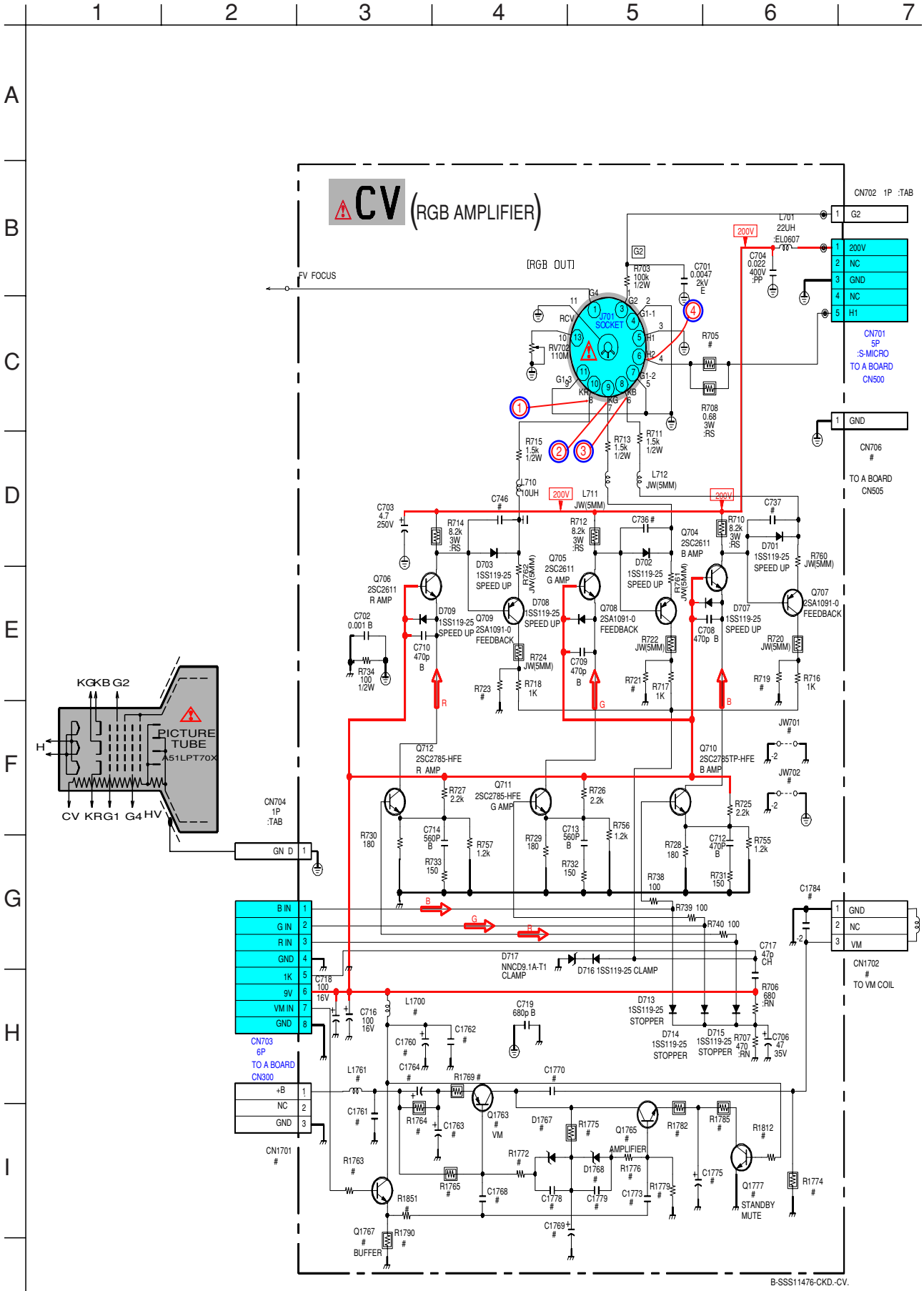
(3) K1 Board Schematic Diagram



(4) K2 Board Schematic Diagram



(5) CV Board Schematic Diagram



5-4. VOLTAGE MEASUREMENT

A BOARD VOLTAGE LIST

Ref	Pin No	Voltage[v]
IC001	1	(4.6) [0]
	2	0
	3	0
	4	(0) [4.5]
	5	4.8
	6	(0) [4.9]
	7	0
	8	0
	9	4.9
	10	4.6
	11	0
	12	0
	13	0
	14	4.7
	15	4.9
	16	0
	17	4.7
	18	0
	19	(0.9) [1.8]
	20	0
	21	4.9
	22	0
	23	(0) [4.9]
	24	(4.9) [0]
	25	0.4
	26	3.6
	27	0
	28	(0.8) [1.6]
	29	4.9
	30	4.7
	31	4.9
	32	0
	33	4.9
	34	2.3
	35	2.1
	36	4.9
	37	0
	38	(2) [4.8]
	39	(0.3) [1]
	40	4.9
	41	4.9
	42	(3.4) [3]
	43	(0.9) [1.6]
	44	4.9
	45	(4.9) [2.6]
	46	4.9
	47	0.4
	48	4.7
	49	0
	50	0
	51	0
	52	0
	53	4.9
	54	4.5
	55	4.9
	56	4.5
	57	3.6
	58	(0) [0.3]
	59	8.9
	60	(0.1) [8.9]
	61	0
	62	0
	63	4.9
	64	4.9
IC002	1	0
	2	4.9
	3	4.8
	4	11
	5	4.9
	6	0
	7	0
IC003	1	0
	2	0
	3	0
	4	0
	5	4.9
	6	4.9
	7	0
	8	4.9
IC004	1	4.7
	2	3.6
	3	0
IC101	I	9
	G	0
	O	0
IC201	1	4.5
	2	4.5
	3	4.5
	4	4.5
	5	4.5
	6	4.5
	7	4.5
	8	4.5
	9	4.5
	10	4.5
	11	4.5
	12	4.5
	13	4.5
	14	4.5
	15	4.5
	16	4.5
	17	4.5
	18	4.5
	19	4.5
	20	0
	21	4.6
	22	4.6
	23	4.5
	24	9
	25	0
	26	3.8
	27	3.8
	28	4.5
IC203	1	0
	2	0
	3	20.3
	4	0
	5	0
	6	0
	7	(*) [9.8]
	8	0.4
	9	0
	10	21
	11	9.7
	12	9.7
IC301	1	(0.9) [1.1]
	2	3.7
	3	0
	4	0
	5	(2.4) [3.6]
	6	(2.9) [4.4]
	7	4.6
	8	4.5
	9	6.6
	10	0
	11	3.3
	12	8.2
	13	(3.8) [4.6]
	14	0
	15	3.1
	16	(0.2) [0.5]
	17	(3.3) [3.9]
	18	6.7
	19	(2.8) [3.1]
	20	(2.7) [2.9]
	21	(2.8) [3]
	22	3.3
	23	3.4
	24	3.4
	25	3.4
	26	0
	27	(2.7) [2.9]
	28	(2.7) [2.9]
	29	2.3
	30	2.4
	31	2.3
	32	2.4
	33	0.3
	34	2.4
	35	2.4
	36	(4.8) [4.3]
	37	8.2
	38	2.5
	39	4.9
	40	1.5
	41	0.64
	42	3.1
	43	3.9
	44	0
	45	4.1
	46	1.3
	47	1.4
	48	4.6
	49	4.6
	50	1.6
	51	3.7
	52	3.8
	53	(4.6) [1.2]
	54	(4.2) [8.2]
	55	2.9
	56	(3.2) [4.1]
IC402	1	5.5
	2	2.5
	3	2.5
	4	0
	5	(9) [2.5]
	6	(5.5) [2.5]
	7	(2.5) [5.5]
	8	(2.4) [9]
IC520	1	9.4
	2	5.8
	3	5.8
	4	0
	5	2.2
	6	2.2
	7	2.2
	8	11.6

A BOARD VOLTAGE LIST

Ref	Pin No	Voltage[v]
IC551	1	0.5
	2	13.6
	3	-12
	4	-13
	5	0.2
	6	13.7
	7	0.5
IC601	1	*
	2	*
	3	(*) [159]
	4	(*) [7]
	5	(*) [2]
IC602	1	(*) [118]
	2	(*) [135]
	3	0
IC604	1	(11) [11.6]
	2	9
	3	0
	4	4.7
IC850	1	2.1
	2	0.7
	3	1.5
	4	0
	5	2.5
	6	2.1
	7	5.8
	8	9
IC851	1	(2.3) [2.7]
	2	3.2
	3	3.2
	4	(0) [0.1]
	5	(0) [2.8]
	6	(2.6) [2.8]
	7	3.7
	8	9
Q001	B	0
	C	4.9
	E	0
Q002	B	0
	C	4.9
	E	0
Q003	B	0
	C	4.9
	E	0
Q004	B	0.1
	C	4.9
	E	0.1
Q005	B	0
	C	4.7
	E	(0) [0.2]
Q100	B	(3.6) [7.4]
	C	9
	E	(4.2) [8.1]
Q102	B	3.1
	C	2.4
	E	9
Q103	B	0
	C	3.2
	E	0
Q104	B	0
	C	(0) [5.5]
	E	3.2
Q105	B	0
	C	(9) [0]
	E	(0.3) [0.6]
Q106	B	0
	C	3.8
	E	0.6
Q201	B	5.6
	C	9
	E	6.2
Q202	B	(6) [3.3]
	C	(0) [1.3]
	E	(13) [13.4]
Q203	B	(5.5) [5.2]
	C	13
	E	(6.1) [5.8]
Q204	B	21.4
	C	21.4
	E	20.7
Q205	B	0
	C	0
	E	(4.7) [0.7]
Q208	B	1.3
	C	1.4
	E	4.8
Q300	B	(3.1) [0.2]
	C	0
	E	0
Q301	B	(3.2) [4.1]
	C	0
	E	(2.4) [4.8]
Q302	B	(0) [4.1]
	C	0
	E	(3.8) [3.6]
Q303	B	(2.4) [4.8]
	C	(7.8) [4.8]
	E	(3) [5.5]
Q304	B	(3) [5.8]
	C	(2.4) [4.8]
	E	(0) [9]
Q305	B	(2.9) [5.8]
	C	(2.3) [4.8]
	E	(2.3) [9]
Q306	B	9
	C	9
	E	(2.9) [4.3]
Q307	B	9
	C	9
	E	(2.9) [4.4]
Q308	B	0
	C	9
	E	0
Q309	B	(2.3) [9]
	C	9
	E	(2.9) [0.1]
Q310	B	0
	C	9
	E	0
Q311	B	(9) [3.5]
	C	9
	E	(2.9) [4.4]
Q312	B	0
	C	(0) [9]
	E	(3.8) [0]
Q313	B	0
	C	(8.9) [0]
	E	(0) [3.3]
Q314	B	0
	C	0
	E	4
Q315	B	2.7
	C	9
	E	0
Q316	B	0
	C	4.9
	E	0
Q317	B	0
	C	9
	E	0
Q318	B	2.6
	C	6.2
	E	3.2
Q319	B	3.8
	C	(8.2) [0.2]
	E	4.4
Q320	B	0
	C	(3.3) [5.4]
	E	0
Q400	B	11.4
	C	(1) [4.4]
	E	11.6
Q401	B	0
	C	(0.1) [0]
	E	(0.1) [0.2]
Q402	B	0
	C	(0.1) [0]
	E	(0.1) [0.2]
Q403	B	5.2
	C	0
	E	4.5
Q404	B	5.2
	C	0
	E	4.5
Q405	B	5.1
	C	0
	E	(4.4) [4.5]
Q406	B	1.8
	C	4.2
	E	2.5
Q407	B	3.5
	C	9
	E	4.2
Q500	B	(*) [133.7]
	C	0
	E	(*) [133.6]
Q520	B	0.6
	C	0
	E	0
Q800	B	0
	C	(*) [30]
	E	0
Q801	B	(0.1) [0]
	C	(*) [99]
	E	(*) [0]
Q802	D	(5.6) [10]
	G	(8) [5.5]
	S	0
Q850	B	5.6
	C	9
	E	5.9

A BOARD VOLTAGE LIST

Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]
Q851	B	5.6	Q924	B	(5.5) [0]	Q962	B	8.3
	C	0		C	9		C	3.2
	E	5.7		E	(6.1) [8.5]		E	7.7
Q922	B	2	Q956	B	0	Q964	B	0.9
	C	5.3		C	0		C	6.6
	E	2.7		E	0.6		E	1.5
Q923	B	(1.4) [1.9]	Q961	B	(1.9)[1.4]	Q966	B	1.0
	C	(2.5) [9]		C	(9) [2.4]		C	6.1
	E	(2.1) [2.4]		E	(2.5)[2.1]		E	1.6

CV BOARD VOLTAGE LIST

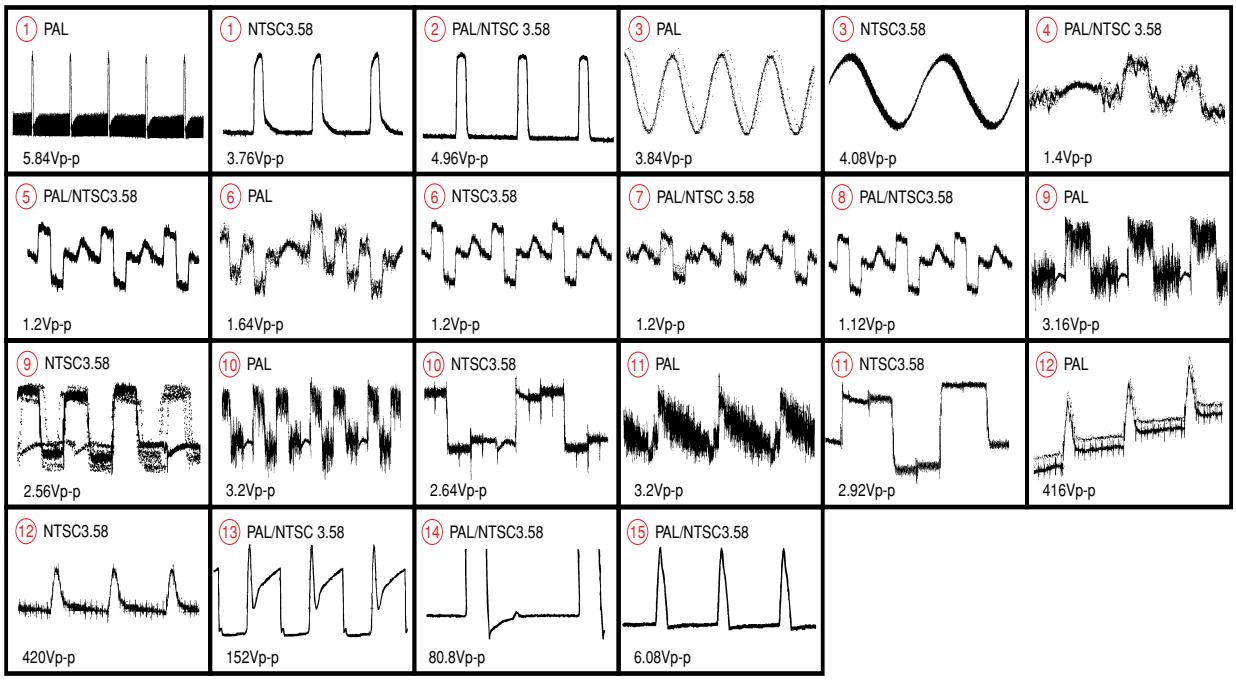
Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]
J701	KR	(110)[102]	Q707	B	(105.6)[96]	Q712	B	2.8
	KG	(112)[104]		C	(7.8)[8.2]		C	8.4
	KB	(103)[96]		E	(102.5)[95]		E	2.1
	H2	(0.1)[0]	Q708	B	(112)[104]	Q1763	B	133.9
	G2	218		C	8		C	68.9
Q704	B	(8.7)[9]		E	(109)[102]		E	134.5
	C	(105.8)[96]	Q709	B	(111)[102]	Q1765	B	0.9
	E	(8.1)[8.4]		C	(8.1)[8.3]		C	68.9
Q705	B	9		E	(108)[100]		E	0.3
	C	(112)[104]	Q710	B	2.9	Q1767	B	5.5
	E	8.3		C	8.4		C	9
Q706	B	9		E	(2.2)[2.4]		E	4.8
	C	(111)[103]	Q711	B	(2.7)[2.9]	Q1777	B	0.7
	E	8.4		C	8.4		C	0
				E	(2.1)[2.3]		E	0

K BOARD VOLTAGE LIST

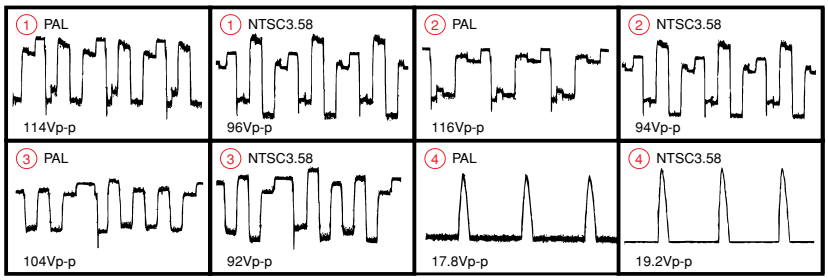
Ref	Pin No.	Voltage[v]	Ref	Pin No.	Voltage[v]
IC1501	1	1.4	Q1503	B	1.0
	2	0.7		C	2.8
	3	11.9		E	0.4
	4	0.7	Q1504	G	0.4
	5	1.4		D	0
	6	0		S	0
	7	0			
	8	10.5			
	9	21.5			
	10	10.6			
	11	0			
IC1502	I	5.1			
	G	0			
	O	5.1			

5-5. WAVEFORMS

A BOARD WAVEFORM



CV BOARD WAVEFORM

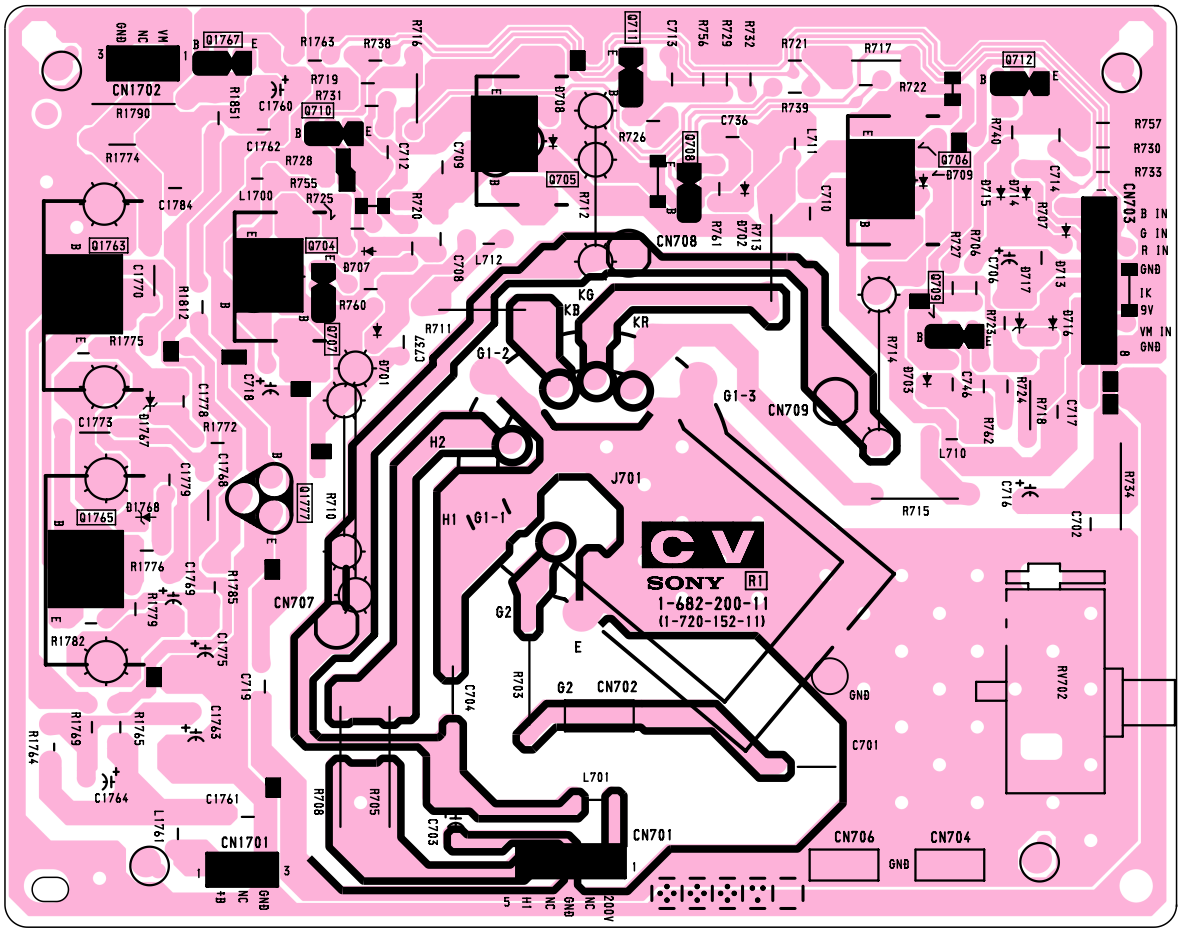


5-6. PRINTED WIRING BOARDS AND PARTS LOCATION

PRINTED WIRING BOARDS

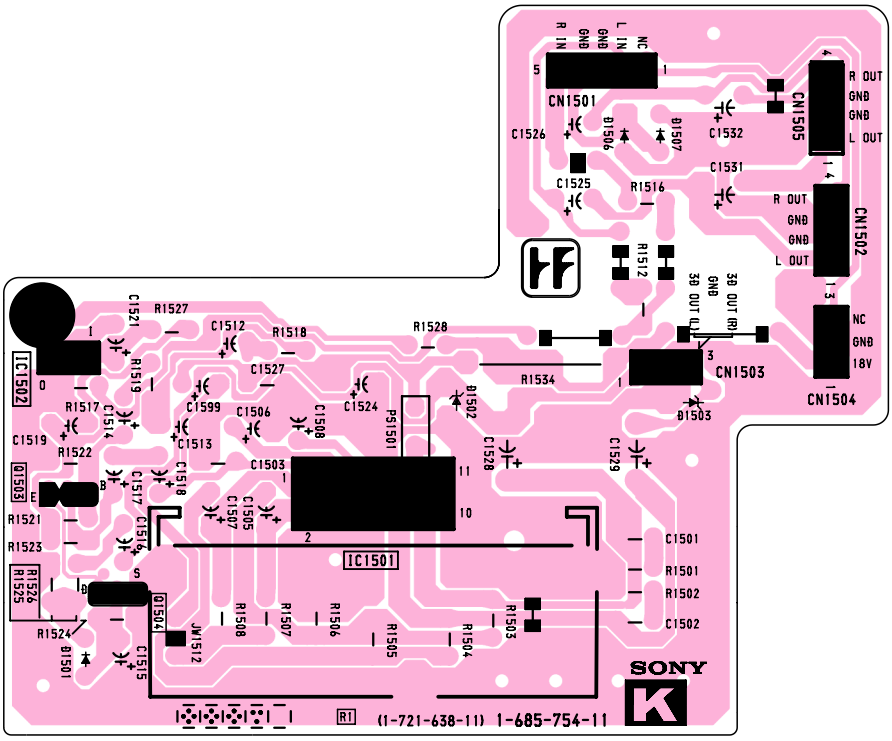
CV [RGB AMPLIFER]

– CV Board –

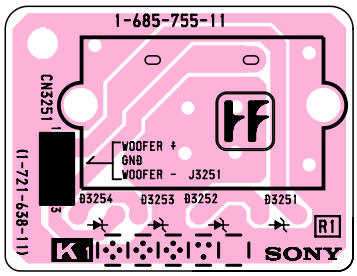


K [WOOFER AMPLIFIER] **K1** [WOOFER TERMINAL] **K2** [TWEETER TERMINAL]

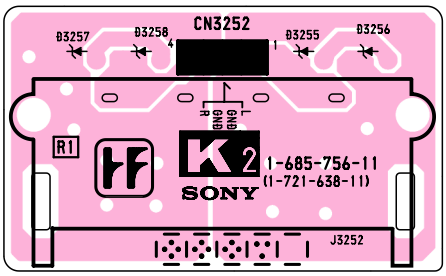
– K Board –



– K1 Board –



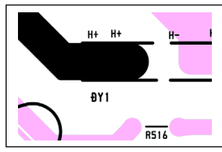
– K2 Board –



KV-HA21M83A
RM-969

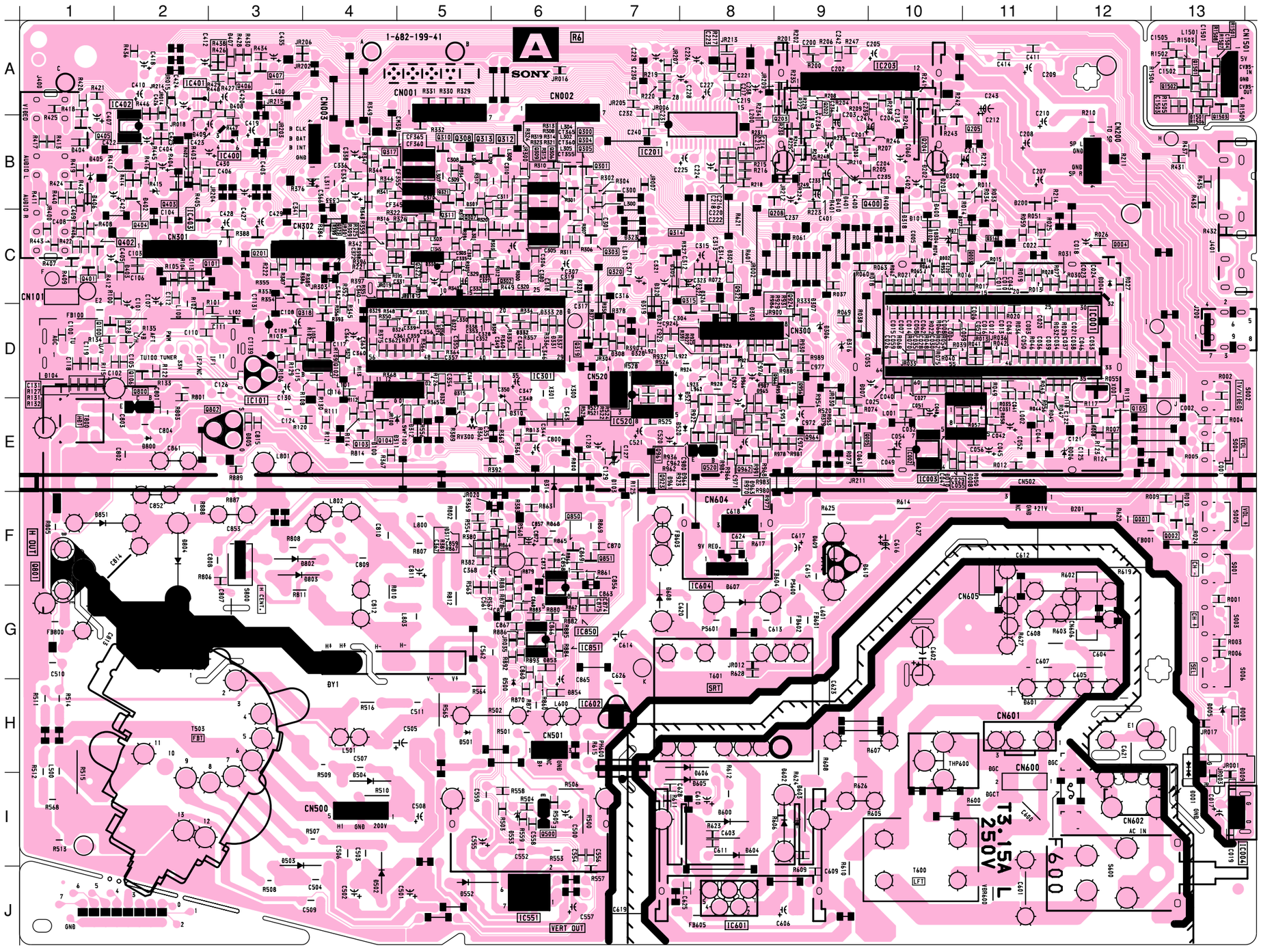
PRINTED WIRING BOARDS

A [POWER SUPPLY,DEFLECTION,
AUDIO AND VIDEO PROCESSING,
AUDIO/VIDEO INPUT/OUTPUT AND SYSTEM CONTROLLER]



NOTE:
The circuit indicated at left contains high voltage of over 1220 Vp-p. Please pay attention when inspecting or repairing it to prevent an electric shock.

– A Board –



A BOARD

IC

IC001	D-12
IC002	E-10
IC003	E-10
IC004	I-13
IC101	D-3
IC201	B-7
IC203	A-10
IC301	D-6
IC400	B-3
IC401	A-2
IC402	A-2
IC403	C-2
IC520	E-7
IC551	J-6
IC601	J-8
IC602	H-7
IC604	G-8
IC850	G-6
IC851	G-6
PH600	H-7

TRANSISTOR

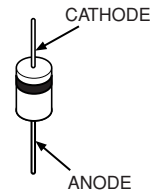
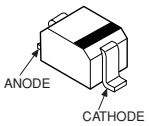
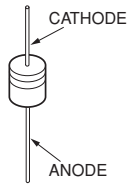
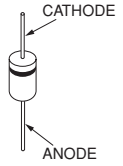
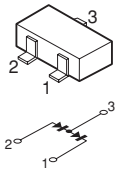
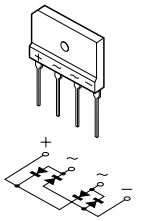
Q001	F-12
Q002	F-13
Q003	C-11
Q004	C-12
Q005	E-10
Q100	D-1
Q101	C-3
Q102	D-4
Q103	E-4
Q104	E-4
Q105	E-12
Q106	D-2
Q201	C-3
Q203	B-9
Q202	A-9
Q204	B-10
Q205	B-11
Q208	C-9
Q300	B-7
Q301	B-7
Q302	C-6
Q303	C-7
Q304	B-7
Q305	B-7
Q306	B-6
Q307	C-5
Q308	B-5
Q309	B-6
Q310	B-5
Q311	C-5
Q312	B-6
Q313	B-5
Q314	C-7
Q315	C-8
Q316	C-11
Q317	B-4
Q318	D-4
Q319	D-6
Q320	C-7
Q321	B-5
Q400	B-10
Q401	C-1
Q402	C-2
Q403	B-2
Q404	C-2
Q405	B-1
Q406	A-3
Q407	A-3
Q500	I-6
Q520	E-8
Q800	D-2
Q802	E-3
Q850	F-6
Q851	F-7
Q922	C-8
Q923	E-7
Q924	C-9
Q956	D-9
Q961	E-7
Q962	E-8
Q964	E-9
Q966	D-9

DIODE

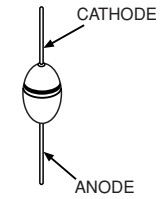
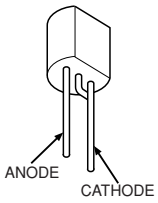
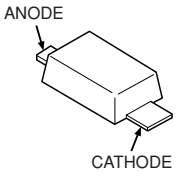
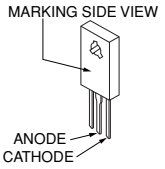
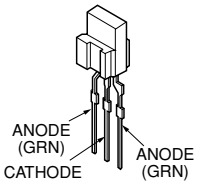
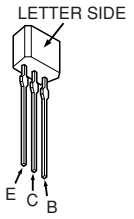
D001	I-13
D002	C-10
D003	H-13
D004	C-12
D005	I-13
D006	E-12
D007	D-9
D008	E-11
D009	I-13
D100	E-4
D101	C-10
D102	C-10
D103	E-7
D104	D-1
D200	B-11
D201	F-12
D202	B-10
D203	B-10
D300	B-10
D301	B-5
D302	C-8
D303	D-8
D304	C-10
D305	C-7
D306	D-9
D307	D-9
D308	D-7
D309	D-6
D310	E-6
D312	E-5
D314	E-6
D315	D-5
D316	D-9
D317	F-5
D318	C-10
D319	D-7
D320	C-7
D321	D-7
D322	D-5
D323	C-7
D324	D-4
D325	D-5
D326	C-8
D327	C-10
D328	D-7
D400	C-10
D401	B-9
D402	B-2
D403	C-2
D404	B-1
D405	B-1
D406	B-1
D407	A-3
D408	A-3
D409	B-2
D410	B-9
D500	H-6
D501	H-5
D502	J-4
D503	I-3
D504	I-4
D520	E-7
D521	D-8
D522	J-5
D553	I-6
D600	I-8
D602	I-9
D603	I-9
D604	I-8
D605	I-8
D606	H-8
D607	G-8
D608	G-7
D609	F-9
D800	E-2
D802	F-4
D803	F-4
D804	F-2
D805	E-3
D851	F-1
D853	G-6
D854	H-6
D961	E-7
D963	E-8
D964	E-8
D965	D-8

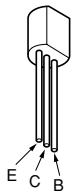
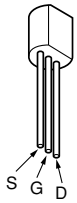
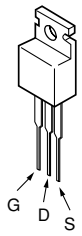
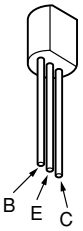
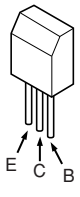
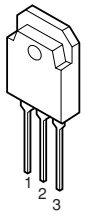
5-7. SEMICONDUCTORS

DIODE

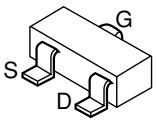
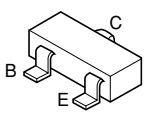
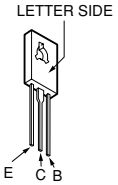
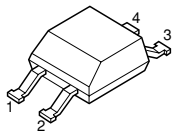
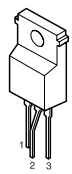
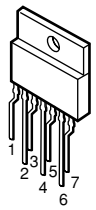
					
ELIZ EGP20G GPO8D NNCD8.2A-T1 NNCD9.1A-T1	UDZSTE-179.1B UDZSTE-175.1B UDZSTE-1713B 1SS355TE-17	EG01CV1 ISS119.25 RD2.2ES-B2 RD15ES-B2 RD30ESB2 RD5.6ESB2	DINL20U D356M-F RU4AM-T3 S3L20UF4	DA204K	D3SB60F3

LED TRANSISTOR

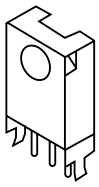
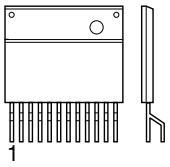
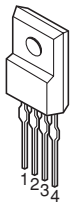
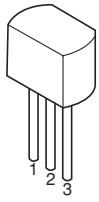
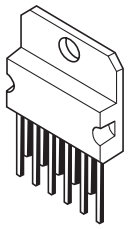
					
BY228	UPC574J	MA8024 ISS356-TW11	D5LC20U	SPB-25MVWF	2SC2785-HFE

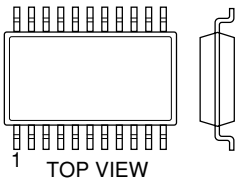
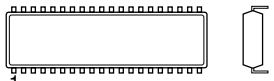
					
2SA1091-0	2SK246-GR3	IRF614-005	2SC3779C	2SC3209LK	2SD2624-CA

IC

					
2SK208-GR-TE85L	DTC144EKA MSB709-RT1 MSD601-RT1 UN2211 UN2213 UN2216 2SA1162-G	2SC2611	PC123F2	SE-135N	AN5522

IC

	MARKING SIDE VIEW  1 Zig-zag In -line Package Pin 6～99	 1 2 3 4	 1 2 3	
SBX3081-21	STR-F6709A TDA8844/N2	PQ09RD11	MC4558CD	TDA2009A

SOP  1 TOP VIEW Small Outline L-Leaded Pin 8～98	DIP  1 TOP VIEW Dual In-line Package Pin 6～98
MM1319AFBE NJM2903M	CXP85224A-080S M24C08-BN6 (A)(8 PIN) TDA7438D013TR

SECTION 6
EXPLODED VIEWS

NOTE:

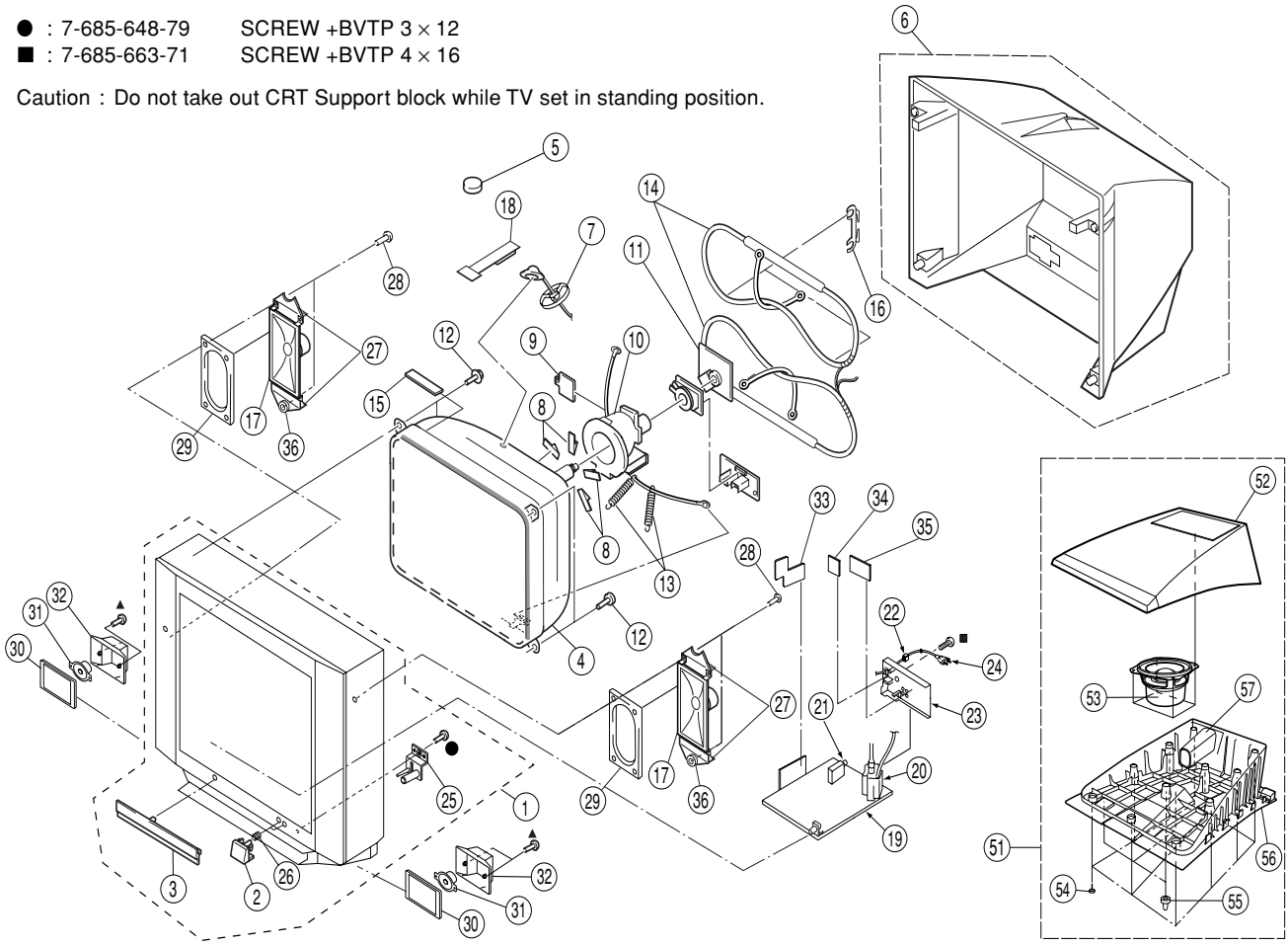
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. PICTURE TUBE AND CHASSIS

● : 7-685-648-79 SCREW +BVTP 3 × 12
■ : 7-685-663-71 SCREW +BVTP 4 × 16

Caution : Do not take out CRT Support block while TV set in standing position.



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4040-829-1	BEZNET ASSY	2,3,25,26
2		4-083-943-01	BUTTON POWER	
3		4-089-246-01	DOOR CONTROL	
4	⚠	8-738-809-05	PICTURE TUBE (A51LPT70X)	
5		1-452-032-00	MAGNET DISC	
6		X-4039-650-2	COVER ASSY REAR (■ 10 SCREWS)	
7	*	3-704-372-11	HOLDER HV CABLE	
8		4-072-365-02	SPACER DY	
9		4-074-013-12	PIECE TLH CONVERGENCE	
10	⚠	8-451-505-21	DEFLECTION YOKE (Y21RSA-O)	
11			CV BOARD MOUNTED (NOT STOCKED)	
12		4-057-862-01	SCREW, TAPPING (5) + CROWN WASHER	
13		4-078-765-01	SPRING EXTENSION	
14	⚠	1-419-479-11	COIL DEGAUSSING	
15		4-069-652-02	CUSHION (HS BAND)	
16		4-064-883-03	HOLDER DGC	
17		1-825-028-11	SPEAKER (15 × 6.5 CM)	
18		4-051-736-42	PIECE A (90) CONV CORRECT	
19			A BOARD COMPLETE (NOT STOCKED)	
20	⚠	1-453-329-21	TRANSFORMER ASSY FLY BACK (NX-4751//M3A4)	
21		8-598-591-10	TUNER BT-AG402	
22		4-022-115-00	HOLDER AC CORD	
23	*	4-083-951-21	BRACKET TERMINAL	
24	⚠	1-823-478-11	CORD AC POWER (WITH CONNECTOR)	
25	*	4-083-944-01	BAR OPTICAL	
26		4-036-405-11	SPRING COMPRESSION	
27	*	4-046-981-03	BRACKET SPEAKER	
28		4-302-404-03	SCREW (WASHER HEAD) (+P 4 × 16)	
29	*	4-069-797-01	CUSHION, SPEAKER (S)	
30		4-080-403-01	BOX FRONT TWEETER	
31		1-529-968-11	SPEAKER (5 CM)	
32		4-080-402-01	BOX REAR TWEETER	
33			K BOARD MOUNTED (NOT STOCKED)	
34			K1 BOARD MOUNTED (NOT STOCKED)	
35			K2 BOARD MOUNTED (NOT STOCKED)	
36		4-374-745-21	CUSHION A	
51		A-1501-889-B	3D BOX ASSY	52 ~ 54
52	*	4-080-405-02	3D BOX TOP	
53		1-544-906-11	SPEAKER (10 CM)	
54		7-685-661-14	SCREW + BVTP 4 × 12 TYPE 2 -IT-3	
55	*	4-068-528-21	FOOT	
56	*	4-080-404-02	3D BOX BOTTOM	
57	*	4-080-406-02	DUCT SPEAKER	

SECTION 7
ELECTRICAL PARTS LIST

A

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

REF NO.	PART NO.	DESCRIPTION			REMARK
		A BOARD COMPLETE (NOT STOCKED)			
		**********			
	1-533-223-11	FUSE HOLDER			
	*4-055-304-01	HOLDER LED			
	4-082-405-01	HOLDER FBT			
	4-382-854-01	SCREW (M3X8) P SW (+)			
	4-382-854-11	SCREW (M3X10) P SW (+)			
	4-382-854-21	SCREW (M3X14) P SW (+)			
	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3			
		<CAPACITOR>			
C001	1-163-005-51	CERAMIC CHIP	470PF	10%	50V
C002	1-163-005-51	CERAMIC CHIP	470PF	10%	50V
C004	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C005	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C006	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C007	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C009	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C010	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C011	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C012	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C013	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C014	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C015	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C016	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C017	1-126-947-11	ELECT	47UF	20.00%	35V
C018	1-126-961-11	ELECT	2.2UF	20.00%	50V
C019	8-719-069-55	DIODE UDZSTE-175.6B			
C020	1-163-005-51	CERAMIC CHIP	470PF	10%	50V
C021	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C022	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C023	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C024	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C025	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C026	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C027	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C028	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C029	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C030	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C031	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C032	1-163-011-91	CERAMIC CHIP	0.0015UF	10.00%	50V
C033	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C034	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C035	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C036	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C037	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C038	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C039	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C041	1-163-245-11	CERAMIC CHIP	56PF	5.00%	50V
C042	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C043	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V

REF NO.	PART NO.	DESCRIPTION			REMARK
C044	1-163-245-11	CERAMIC CHIP	56PF	5.00%	50V
C045	1-126-962-11	ELECT	3.3UF	20.00%	50V
C046	1-163-033-51	CERAMIC CHIP	0.022UF		50V
C047	1-164-005-51	CERAMIC CHIP	470000PF	10%	25V
C048	1-126-965-91	ELECT	22UF	20.00%	50V
C049	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C050	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C051	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C052	1-126-935-11	ELECT	470UF	20.00%	16V
C053	1-126-935-11	ELECT	470UF	20.00%	16V
C054	1-104-666-11	ELECT	220UF	20.00%	25V
C055	1-163-001-51	CERAMIC CHIP	220PF	10%	50V
C056	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C057	1-163-001-51	CERAMIC CHIP	220PF	10%	50V
C058	1-163-001-51	CERAMIC CHIP	220PF	10%	50V
C061	1-164-161-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C063	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C100	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C101	1-126-964-11	ELECT	10UF	20.00%	50V
C102	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C103	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C104	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C105	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C106	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C107	1-126-935-11	ELECT	470UF	20.00%	16V
C108	1-126-767-11	ELECT	1000UF	20.00%	16V
C109	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C111	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C115	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C116	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C117	1-163-245-11	CERAMIC CHIP	56PF	5.00%	50V
C121	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C122	1-163-227-51	CERAMIC CHIP	10PF	0.50PF	50V
C124	1-130-493-00	MYLAR	0.068UF	5.00%	50V
C125	1-130-495-00	MYLAR	0.1UF	5.00%	50V
C126	1-130-493-00	MYLAR	0.068UF	5.00%	50V
C127	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C128	1-126-965-91	ELECT	22UF	20.00%	50V
C129	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C131	1-164-161-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C200	1-115-340-51	CERAMIC CHIP	0.22UF	10.00%	25V
C201	1-115-340-51	CERAMIC CHIP	0.22UF	10.00%	25V
C202	1-136-169-00	FILM	0.22UF	5.00%	50V
C204	1-136-169-00	FILM	0.22UF	5.00%	50V
C206	1-126-968-11	ELECT	100UF	20.00%	50V
C207	1-126-942-61	ELECT	1000UF	20.00%	25V
C208	1-128-551-11	ELECT	22UF	20.00%	63V
C209	1-126-942-61	ELECT	1000UF	20.00%	25V
C210	1-128-551-11	ELECT	22UF	20.00%	63V
C211	1-126-959-11	ELECT	0.47UF	20.00%	50V
C213	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C214	1-107-725-11	CERAMIC CHIP	0.1UF	10.00%	16V

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK	
C215	1-107-725-11	CERAMIC CHIP	0.1UF	10.00%	16V
C216	1-107-725-11	CERAMIC CHIP	0.1UF	10.00%	16V
C217	1-163-037-11	CERAMIC CHIP	0.022UF	10.00%	50V
C218	1-107-725-11	CERAMIC CHIP	0.1UF	10.00%	16V
C219	1-163-024-00	CERAMIC CHIP	0.018UF	10.00%	50V
C220	1-163-037-11	CERAMIC CHIP	0.022UF	10.00%	50V
C221	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C222	1-163-024-00	CERAMIC CHIP	0.018UF	10.00%	50V
C223	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C224	1-126-960-11	ELECT	1UF	20.00%	50V
C225	1-126-960-11	ELECT	1UF	20.00%	50V
C226	1-126-963-11	ELECT	4.7UF	20.00%	50V
C227	1-126-947-11	ELECT	47UF	20.00%	35V
C228	1-126-960-11	ELECT	1UF	20.00%	50V
C229	1-126-959-11	ELECT	0.47UF	20.00%	50V
C230	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C231	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C232	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C234	1-107-823-51	CERAMIC CHIP	470000PF	10%	16V
C236	1-126-959-11	ELECT	0.47UF	20.00%	50V
C237	1-126-951-11	ELECT	470UF	20.00%	35V
C240	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C241	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C242	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C243	1-126-952-11	ELECT	1000UF	20.00%	35V
C300	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C301	1-163-237-51	CERAMIC CHIP	27PF	10%	50V
C302	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C303	1-163-113-00	CERAMIC CHIP	68PF	10%	50V
C304	1-163-255-51	CERAMIC CHIP	150PF	10%	50V
C305	1-126-933-11	ELECT	100UF	20.00%	16V
C306	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C308	1-163-131-00	CERAMIC CHIP	390PF	10%	50V
C309	1-163-263-51	CERAMIC CHIP	330PF	10%	50V
C310	1-163-131-00	CERAMIC CHIP	390PF	10%	50V
C311	1-163-005-51	CERAMIC CHIP	470PF	10%	50V
C312	1-163-229-51	CERAMIC CHIP	12PF	10%	50V
C315	1-126-961-11	ELECT	2.2UF	20.00%	50V
C316	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C317	1-216-295-61	SHORT CHIP	0		
C318	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C319	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C320	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C321	1-126-963-11	ELECT	4.7UF	20.00%	50V
C323	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C327	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C328	1-164-222-91	CERAMIC CHIP	0.22UF		25V
C329	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C330	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C332	1-126-933-11	ELECT	100UF	20.00%	16V
C335	1-126-947-11	ELECT	47UF	20.00%	35V
C337	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C339	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C342	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C343	1-163-231-51	CERAMIC CHIP	15PF	10%	50V
C344	1-163-231-51	CERAMIC CHIP	15PF	10%	50V
C345	1-164-182-11	CERAMIC CHIP	3300PF	10%	50V
C346	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C347	1-126-933-11	ELECT	100UF	20.00%	16V
C348	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C349	1-164-346-51	CERAMIC CHIP	1UF	10%	16V

REF NO.	PART NO.	DESCRIPTION		REMARK	
C352	1-164-161-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C353	1-107-823-51	CERAMIC CHIP	470000PF	10%	16V
C354	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C355	1-107-823-51	CERAMIC CHIP	470000PF	10%	16V
C356	1-164-232-11	CERAMIC CHIP	0.01UF	10.00%	100V
C357	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C358	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C359	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C360	1-136-165-00	FILM	0.1UF	5.00%	50V
C361	1-164-505-51	CERAMIC CHIP	2.2UF	10%	16V
C362	1-164-005-51	CERAMIC CHIP	470000PF	10%	25V
C363	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C364	1-126-964-11	ELECT	10UF	20.00%	50V
C366	1-126-933-11	ELECT	100UF	20.00%	16V
C369	1-137-194-81	FILM	0.47UF	5.00%	50V
C370	1-216-295-61	SHORT CHIP	0		
C371	1-126-964-11	ELECT	10UF	20.00%	50V
C400	1-126-934-11	ELECT	220UF	20.00%	16V
C403	1-164-346-51	CERAMIC CHIP	1UF	10%	16V
C404	1-126-960-11	ELECT	1UF	20.00%	50V
C405	1-126-960-11	ELECT	1UF	20.00%	50V
C406	1-164-346-51	CERAMIC CHIP	1UF	10%	16V
C407	1-126-934-11	ELECT	220UF	20.00%	16V
C408	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C409	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C410	1-126-933-11	ELECT	100UF	20.00%	16V
C411	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C412	1-128-551-11	ELECT	22UF	20.00%	63V
C414	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C418	1-126-933-11	ELECT	100UF	20.00%	16V
C425	1-163-113-00	CERAMIC CHIP	68PF	10%	50V
C426	1-163-113-00	CERAMIC CHIP	68PF	10%	50V
C435	1-126-934-11	ELECT	220UF	20.00%	16V
C500	1-126-933-11	ELECT	100UF	20.00%	16V
C501	1-104-666-11	ELECT	220UF	20.00%	25V
C502	1-104-666-11	ELECT	220UF	20.00%	25V
C503	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C504	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C505	1-123-024-21	ELECT	33UF		160V
C507	1-102-228-00	CERAMIC	470PF	10.00%	500V
C508	1-107-654-11	ELECT	33UF	20.00%	250V
C509	1-106-379-12	MYLAR	0.033UF	5.00%	200V
C510	1-137-150-11	FILM	0.01UF	5.00%	100V
C552	1-137-194-81	FILM	0.47UF	5.00%	50V
C554	1-163-035-51	CERAMIC CHIP	0.047UF		50V
C555	1-126-949-11	ELECT	220UF	20.00%	35V
C556	1-163-038-00	CERAMIC CHIP	0.1UF		25V
C557	1-126-948-11	ELECT	100UF	20.00%	35V
C558	1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C559	1-106-220-00	MYLAR	0.1UF	10.00%	100V
C561	1-163-017-00	CERAMIC CHIP	0.0047UF	10.00%	50V
C562	1-106-220-00	MYLAR	0.1UF	10.00%	100V
C600	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C601	⚠ 1-115-165-11	FILM	0.1UF	20.00%	275V
C602	1-117-752-11	ELECT(BLOCK)	330UF	20.00%	450V
C603	1-117-623-21	FILM	1500PF	3.00%	1.2KV
C604	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C605	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C606	1-104-666-11	ELECT	220UF	20.00%	25V
C607	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C608	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C609	1-163-005-51	CERAMIC CHIP	470PF	10%	50V

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.		PART NO.	DESCRIPTION			REMARK
C610		1-165-740-31	ELECT	150UF	20%	35V
C611		1-163-145-00	CERAMIC CHIP	0.0015UF	5.00%	50V
C612	⚠	1-119-886-51	CERAMIC	470PF	10.00%	250V
C613		1-102-228-00	CERAMIC	470PF	10.00%	500V
C614		1-123-024-21	ELECT	33UF		160V
C615		1-102-228-00	CERAMIC	470PF	10.00%	500V
C617		1-126-942-61	ELECT	1000UF	20.00%	25V
C618		1-126-933-11	ELECT	100UF	20.00%	16V
C619	⚠	1-119-886-51	CERAMIC	470PF	10.00%	250V
C620		1-162-134-11	CERAMIC	470PF	10.00%	2KV
C621	⚠	1-117-703-51	CERAMIC	0.0047UF	99%	250V
C625		8-719-083-70	DIODE UDZSTE-1727B			
C626		1-106-383-00	MYLAR	0.047UF	10.00%	200V
C627		1-126-953-11	ELECT	2200UF	20.00%	35V
C628		1-163-005-51	CERAMIC CHIP	470PF	10%	50V
C800		1-126-960-11	ELECT	1UF	20.00%	50V
C801		1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C802		1-106-375-12	MYLAR	0.022UF	5.00%	200V
C803		1-102-244-00	CERAMIC	220PF	10.00%	500V
C804		1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C807		1-162-115-00	CERAMIC	330PF	10.00%	2KV
C808		1-106-365-00	MYLAR	0.0082UF	10.00%	200V
C809		1-107-364-11	MYLAR	0.01UF	10.00%	200V
C810		1-106-375-12	MYLAR	0.022UF	5.00%	200V
C811		1-107-957-11	ELECT	1UF	20.00%	250V
C812		1-117-665-11	FILM	0.33UF	5.00%	250V
C813		1-162-115-00	CERAMIC	330PF	10.00%	2KV
C814		1-117-646-11	FILM	12000PF	3.00%	1.2KV
C852		1-107-846-11	FILM	0.1UF	5.00%	400V
C856		1-163-009-11	CERAMIC CHIP	0.001UF	10.00%	50V
C857		1-126-964-11	ELECT	10UF	20.00%	50V
C858		1-163-031-11	CERAMIC CHIP	0.01UF		50V
C859		1-163-031-11	CERAMIC CHIP	0.01UF		50V
C860		1-208-834-11	METAL CHIP	150K	0.5%	1/10W
C861		1-130-202-00	FILM	0.022UF	5.00%	400V
C863		1-216-295-61	SHORT CHIP	0		
C865		1-126-933-11	ELECT	100UF	20.00%	16V
C866		1-163-031-11	CERAMIC CHIP	0.01UF		50V
C867		1-164-161-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C868		1-163-033-51	CERAMIC CHIP	0.022UF		50V
C869		1-115-339-51	CERAMIC CHIP	0.1UF	10.00%	50V
C870		1-163-001-51	CERAMIC CHIP	220PF	10%	50V
C872		1-163-038-00	CERAMIC CHIP	0.1UF		25V
C873		1-163-031-11	CERAMIC CHIP	0.01UF		50V
C874		1-163-031-11	CERAMIC CHIP	0.01UF		50V
C875		1-163-038-00	CERAMIC CHIP	0.1UF		25V

<CERAMIC TRAP>

CF345		1-234-684-21	FILTER BAND PASS (F4.5C)
CF355		1-234-686-21	FILTER BAND PASS (F5.5C)
CF360		1-234-689-21	FILTER BAND PASS (F6.0C)
CF365		1-234-691-21	FILTER BAND PASS (F6.5C)

<CONNECTOR>

CN003	*	1-508-797-00	PIN CONNECTOR 4P
CN200	*	1-564-507-11	PLUG CONNECTOR 4P
CN300	*	1-564-509-11	PLUG CONNECTOR 6P
CN500	*	1-564-508-11	PLUG CONNECTOR 5P
CN502	*	1-564-506-11	PLUG CONNECTOR 3P
CN600	*	1-508-786-00	PIN CONNECTOR (5MM PITCH) 2P
CN601	*	1-691-134-11	PIN CONNECTOR (PC BOARD) 2P
CN602	*	1-580-843-11	PIN CONNECTOR (POWER)

<TRIMMER>

CT131		1-767-774-22	TRAP CERAMIC
CT139		1-767-775-22	TRAP CERAMIC
CT345		1-795-342-11	TRAP CERAMIC (T4.5C)
CT355		1-795-343-21	TRAP CERAMIC (T55B)
CT360		1-795-344-11	TRAP CERAMIC (T60B)
CT365		1-795-345-11	TRAP CERAMIC (T65B)

<DIODE>

D001		8-719-083-18	DIODE SPB-25MVWF
D004		8-719-911-19	DIODE 1SS119-25
D005		1-162-318-11	CERAMIC 0.001UF 10.00% 500V
D006		8-719-109-89	DIODE RD5.6ESB2
D007		8-719-069-54	DIODE UDZSTE-175.1B
D009		8-719-069-54	DIODE UDZSTE-175.1B
D100		8-719-044-76	DIODE 1SS356-TW11
D103		8-759-157-40	IC UPC574J
D104		8-719-914-42	DIODE DA204K
D200		8-719-914-42	DIODE DA204K
D202		8-719-988-61	DIODE 1SS355TE-17
D203		8-719-988-61	DIODE 1SS355TE-17
D301		8-719-988-61	DIODE 1SS355TE-17
D304		8-719-017-70	DIODE MA8024
D305		8-719-988-61	DIODE 1SS355TE-17
D306		8-719-109-54	DIODE RD2.2ESB2
D307		8-719-988-61	DIODE 1SS355TE-17
D308		8-719-988-61	DIODE 1SS355TE-17
D309		8-719-069-60	DIODE UDZSTE-179.1B
D310		8-719-911-19	DIODE 1SS119-25
D311		8-719-070-15	DIODE NNCD8.2A-T1
D312		8-719-069-60	DIODE UDZSTE-179.1B
D314		8-719-908-03	DIODE GP08D
D315		8-719-988-61	DIODE 1SS355TE-17
D318		8-719-988-61	DIODE 1SS355TE-17
D319		8-719-988-61	DIODE 1SS355TE-17
D320		8-719-988-61	DIODE 1SS355TE-17
D321		8-719-988-61	DIODE 1SS355TE-17
D322		8-719-069-60	DIODE UDZSTE-179.1B
D323		8-719-069-60	DIODE UDZSTE-179.1B
D324		8-719-069-60	DIODE UDZSTE-179.1B
D325		8-719-069-60	DIODE UDZSTE-179.1B
D327		8-719-988-61	DIODE 1SS355TE-17
D331		8-719-069-60	DIODE UDZSTE-179.1B
D332		8-719-069-60	DIODE UDZSTE-179.1B
D333		8-719-069-60	DIODE UDZSTE-179.1B
D400		8-719-988-61	DIODE 1SS355TE-17
D401		8-719-988-61	DIODE 1SS355TE-17
D402		8-719-070-16	DIODE NNCD9.1A-T1
D403		8-719-069-60	DIODE UDZSTE-179.1B
D404		8-719-069-60	DIODE UDZSTE-179.1B
D405		8-719-070-16	DIODE NNCD9.1A-T1
D406		8-719-069-60	DIODE UDZSTE-179.1B
D407		8-719-069-60	DIODE UDZSTE-179.1B
D500		8-719-911-19	DIODE 1SS119-25

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

A

REF NO.		PART NO.	DESCRIPTION		REMARK
D501		8-719-911-19	DIODE 1SS119-25		
D502		8-719-302-43	DIODE EL1Z		
D503		8-719-302-43	DIODE EL1Z		
D504		8-719-302-43	DIODE EL1Z		
D552		8-719-908-03	DIODE GP08D		
D553		8-719-109-89	DIODE RD5.6ESB2		
D600		8-719-030-33	DIODE EG01CV1		
D601		8-719-077-77	DIODE D3SB60F3		
D602		8-719-510-73	DIODE S3L20UF4		
D603		8-719-110-41	DIODE RD15ESB2		
D604		8-719-063-70	DIODE D1NL20U		
D605		8-719-063-70	DIODE D1NL20U		
D606		8-719-063-70	DIODE D1NL20U		
D607		8-719-027-22	DIODE D3S6M-F		
D608		8-719-312-10	DIODE RU4AM-T3		
D610		8-719-510-37	DIODE D5LC20U		
D800		8-719-911-19	DIODE 1SS119-25		
D802		8-719-908-03	DIODE GP08D		
D803		8-719-908-03	DIODE GP08D		
D804		8-719-081-00	DIODE BY228/A52A/		
D805		8-719-069-60	DIODE UDZSTE-179.1B		
D851		8-719-979-85	DIODE EGP20G		
D853		8-719-988-61	DIODE 1SS355TE-17		
D854		8-719-083-63	DIODE UDZSTE-1713B		
			<DEFLECTION YOKE>		
DY1	*	1-580-798-11	CONNECTOR PIN (DY) 6P		
			<FUSE>		
F600	⚠	1-576-016-11	FUSE	3.15A	250V
			<FERRITE BEAD>		
FB001		1-410-397-21	FERRITE	1.1UH	
FB100		1-410-396-71	FERRITE	0.45UH	
FB602		1-410-397-21	FERRITE	1.1UH	
FB603		1-412-911-31	FERRITE	0UH	
FB604		1-410-397-21	FERRITE	1.1UH	
FB800		1-410-397-21	FERRITE	1.1UH	
			<IC>		
IC001		8-752-925-65	IC CXP85224A-080S		
IC002		8-759-371-21	IC MM1319AFBE		
IC003		8-759-672-78	IC M24C08-BN6(A)		
IC004		8-742-225-20	IC SBX3081-21		
IC201		8-759-476-86	IC TDA7438D013TR		
IC203		6-700-034-01	IC AN5276		
IC301		6-700-146-01	IC TDA8844/N2		
IC402		8-759-649-89	IC MC4558CD		
IC551		8-759-835-98	IC AN5522		
IC601		6-702-720-01	IC STR-F6709A		
IC602		8-749-920-61	IC SE-135N		
IC604		8-759-459-99	IC PQ09RD11		
IC850		8-759-700-07	IC NJM2903M		
IC851		8-759-649-89	IC MC4558CD		

REF NO.		PART NO.	DESCRIPTION			REMARK
			<SOCKET>			
J200		1-770-786-12	JACK			
J400		1-779-850-11	JACK BLOCK PIN 6P			
J401		1-770-329-13	JACK PIN 3P			
			<JUMPER RESISTOR>			
JR001		1-216-295-61	SHORT CHIP	0		
JR003		1-216-295-61	SHORT CHIP	0		
JR006		1-216-295-61	SHORT CHIP	0		
JR013		1-216-295-61	SHORT CHIP	0		
JR014		1-216-295-61	SHORT CHIP	0		
JR015		1-216-295-61	SHORT CHIP	0		
JR016		1-216-295-61	SHORT CHIP	0		
JR018		1-216-295-61	SHORT CHIP	0		
JR020		1-216-295-61	SHORT CHIP	0		
JR034		1-216-295-61	SHORT CHIP	0		
JR035		1-216-295-61	SHORT CHIP	0		
JR036		1-216-295-61	SHORT CHIP	0		
JR205		1-216-295-61	SHORT CHIP	0		
JR210		1-216-295-61	SHORT CHIP	0		
JR212		1-216-295-61	SHORT CHIP	0		
JR214		1-216-295-61	SHORT CHIP	0		
JR301		1-216-295-61	SHORT CHIP	0		
JR304		1-216-295-61	SHORT CHIP	0		
JR400		1-216-295-61	SHORT CHIP	0		
JW146		1-260-103-11	CARBON	2.2K	5%	1/2W
			<COIL>			
L001		1-414-855-31	INDUCTOR	1UH		
L002		1-414-184-41	INDUCTOR	15UH		
L100		1-414-856-11	INDUCTOR	10UH		
L101		1-410-498-11	INDUCTOR	1.2UH		
L102		1-410-985-42	INDUCTOR	0.22UH		
L103		1-410-987-42	INDUCTOR	0.33UH		
L200		1-249-401-11	CARBON	47	5%	1/4W
L300		1-410-512-11	INDUCTOR	18UH		
L301		1-410-510-11	INDUCTOR	12UH		
L302		1-410-508-11	INDUCTOR	8.2UH		
L303		1-410-508-11	INDUCTOR	8.2UH		
L304		1-410-510-11	INDUCTOR	12UH		
L305		1-410-510-11	INDUCTOR	12UH		
L306		1-410-500-11	INDUCTOR	1.8UH		
L307		1-410-501-11	INDUCTOR	2.2UH		
L308		1-410-501-11	INDUCTOR	2.2UH		
L309		1-410-502-11	INDUCTOR	2.7UH		
L310		1-408-608-31	INDUCTOR	27UH		
L400		1-414-187-11	INDUCTOR	47UH		
L500		1-408-947-00	INDUCTOR	2.2MH		
L600		1-412-533-21	INDUCTOR	47UH		
L800		1-406-677-11	INDUCTOR	10MH		
L802		1-424-796-11	COIL HORIZONTAL LINEARITY			
L803		1-414-493-41	INDUCTOR	4.7MH		
			<PHOTOCOUPLER>			
PH600	⚠	8-749-010-64	PHOTO COUPLER PC123F2			

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REF NO.	PART NO.	DESCRIPTION	REMARK
		<PROTECTOR MODULE>	
PS600	1-533-597-41	IC LINK	5A 90V
PS601	1-533-597-41	IC LINK	5A 90V
		<TRANSISTOR>	
Q001	8-729-421-19	TRANSISTOR UN2213	
Q002	8-729-421-19	TRANSISTOR UN2213	
Q003	8-729-010-25	TRANSISTOR MSD601-RT1	
Q004	8-729-010-25	TRANSISTOR MSD601-RT1	
Q005	8-729-421-19	TRANSISTOR UN2213	
Q100	8-729-010-25	TRANSISTOR MSD601-RT1	
Q102	8-729-022-54	TRANSISTOR 2SC3779C,D-AA	
Q103	8-729-424-67	TRANSISTOR UN2216	
Q104	8-729-424-67	TRANSISTOR UN2216	
Q105	8-729-010-25	TRANSISTOR MSD601-RT1	
Q106	8-729-010-25	TRANSISTOR MSD601-RT1	
Q201	8-729-010-25	TRANSISTOR MSD601-RT1	
Q202	8-729-036-56	TRANSISTOR 2SK208-GR-TE85L	
Q203	8-729-010-25	TRANSISTOR MSD601-RT1	
Q204	8-729-216-22	TRANSISTOR 2SA1162-G	
Q205	8-729-421-22	TRANSISTOR UN2211	
Q208	1-801-806-11	TR DTC144EKA	
Q300	8-729-010-05	TRANSISTOR MSB709-RT1	
Q301	8-729-010-05	TRANSISTOR MSB709-RT1	
Q302	8-729-010-05	TRANSISTOR MSB709-RT1	
Q303	8-729-010-25	TRANSISTOR MSD601-RT1	
Q304	8-729-010-05	TRANSISTOR MSB709-RT1	
Q305	8-729-010-05	TRANSISTOR MSB709-RT1	
Q306	8-729-010-25	TRANSISTOR MSD601-RT1	
Q307	8-729-010-25	TRANSISTOR MSD601-RT1	
Q308	8-729-424-67	TRANSISTOR UN2216	
Q309	8-729-010-25	TRANSISTOR MSD601-RT1	
Q310	8-729-424-67	TRANSISTOR UN2216	
Q311	8-729-010-25	TRANSISTOR MSD601-RT1	
Q312	8-729-424-67	TRANSISTOR UN2216	
Q313	8-729-424-67	TRANSISTOR UN2216	
Q314	8-729-421-22	TRANSISTOR UN2211	
Q315	8-729-010-25	TRANSISTOR MSD601-RT1	
Q318	8-729-010-25	TRANSISTOR MSD601-RT1	
Q320	8-729-421-22	TRANSISTOR UN2211	
Q400	8-729-010-05	TRANSISTOR MSB709-RT1	
Q401	8-729-424-67	TRANSISTOR UN2216	
Q402	8-729-424-67	TRANSISTOR UN2216	
Q403	8-729-010-05	TRANSISTOR MSB709-RT1	
Q404	8-729-010-05	TRANSISTOR MSB709-RT1	
Q405	8-729-010-05	TRANSISTOR MSB709-RT1	
Q406	8-729-010-25	TRANSISTOR MSD601-RT1	
Q407	8-729-010-25	TRANSISTOR MSD601-RT1	
Q500	8-729-200-17	TRANSISTOR 2SA1091-O	
Q800	8-729-140-50	TRANSISTOR 2SC3209LK	
Q801	8-729-055-74	TRANSISTOR 2SD2624-CA	
Q802	8-729-050-48	TRANSISTOR IRF614-005	
Q850	8-729-010-25	TRANSISTOR MSD601-RT1	
Q851	8-729-010-05	TRANSISTOR MSB709-RT1	
		<RESISTOR>	
R001	1-216-071-61	RES-CHIP 8.2K	5% 1/10W
R002	1-216-071-61	RES-CHIP 8.2K	5% 1/10W
R003	1-216-059-61	RES-CHIP 2.7K	5% 1/10W
R004	1-216-059-61	RES-CHIP 2.7K	5% 1/10W
R005	1-216-043-61	RES-CHIP 560	5% 1/10W
R006	1-216-043-61	RES-CHIP 560	5% 1/10W
R007	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R008	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R009	1-216-037-61	RES-CHIP 330	5% 1/10W
R010	1-216-037-61	RES-CHIP 330	5% 1/10W
R011	1-216-295-61	SHORT CHIP 0	
R012	1-216-049-61	RES-CHIP 1K	5% 1/10W
R013	1-216-021-61	RES-CHIP 68	5% 1/10W
R014	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R015	1-216-025-61	RES-CHIP 100	5% 1/10W
R016	1-216-037-61	RES-CHIP 330	5% 1/10W
R017	1-216-049-61	RES-CHIP 1K	5% 1/10W
R018	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R019	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R020	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R021	1-216-049-61	RES-CHIP 1K	5% 1/10W
R022	1-216-049-61	RES-CHIP 1K	5% 1/10W
R024	1-216-025-61	RES-CHIP 100	5% 1/10W
R025	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R026	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R027	1-216-101-61	RES-CHIP 150K	5% 1/10W
R028	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R029	1-216-025-61	RES-CHIP 100	5% 1/10W
R031	1-216-025-61	RES-CHIP 100	5% 1/10W
R032	1-216-049-61	RES-CHIP 1K	5% 1/10W
R033	1-216-073-61	RES-CHIP 10K	5% 1/10W
R034	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R035	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R036	1-216-057-61	RES-CHIP 2.2K	5% 1/10W
R037	1-216-049-61	RES-CHIP 1K	5% 1/10W
R038	1-216-049-61	RES-CHIP 1K	5% 1/10W
R039	1-216-043-61	RES-CHIP 560	5% 1/10W
R042	1-216-039-61	RES-CHIP 390	5% 1/10W
R043	1-216-025-61	RES-CHIP 100	5% 1/10W
R044	1-216-033-61	RES-CHIP 220	5% 1/10W
R045	1-216-073-61	RES-CHIP 10K	5% 1/10W
R046	1-216-685-11	METAL CHIP 27K	0.5% 1/10W
R047	1-216-025-61	RES-CHIP 100	5% 1/10W
R048	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R049	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R050	1-208-820-11	METAL CHIP 39K	0.5% 1/10W
R051	1-216-073-61	RES-CHIP 10K	5% 1/10W
R052	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R053	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R054	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R055	1-216-049-61	RES-CHIP 1K	5% 1/10W
R056	1-216-049-61	RES-CHIP 1K	5% 1/10W
R057	1-216-025-61	RES-CHIP 100	5% 1/10W
R058	1-216-025-61	RES-CHIP 100	5% 1/10W
R059	1-216-033-61	RES-CHIP 220	5% 1/10W
R060	1-216-033-61	RES-CHIP 220	5% 1/10W
R061	1-216-033-61	RES-CHIP 220	5% 1/10W
R062	1-216-049-61	RES-CHIP 1K	5% 1/10W
R063	1-216-049-61	RES-CHIP 1K	5% 1/10W
R064	1-216-049-61	RES-CHIP 1K	5% 1/10W
R065	1-216-049-61	RES-CHIP 1K	5% 1/10W
R066	1-216-049-61	RES-CHIP 1K	5% 1/10W
R072	1-216-065-61	RES-CHIP 4.7K	5% 1/10W
R073	1-216-081-61	RES-CHIP 22K	5% 1/10W
R074	1-216-049-61	RES-CHIP 1K	5% 1/10W

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R077	1-216-025-61	RES-CHIP	100	5%	1/10W
R100	1-216-049-61	RES-CHIP	1K	5%	1/10W
R103	1-216-013-61	METAL CHIP	33	5%	1/10W
R106	1-216-065-61	RES-CHIP	4.7K	5%	1/10W
R107	1-216-063-61	RES-CHIP	3.9K	5%	1/10W
R108	1-216-041-61	RES-CHIP	470	5%	1/10W
R109	1-216-019-61	METAL CHIP	56	5%	1/10W
R111	1-216-073-61	RES-CHIP	10K	5%	1/10W
R112	1-216-069-61	RES-CHIP	6.8K	5%	1/10W
R113	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R114	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R115	1-216-065-61	RES-CHIP	4.7K	5%	1/10W
R117	1-216-081-61	RES-CHIP	22K	5%	1/10W
R118	1-216-041-61	RES-CHIP	470	5%	1/10W
R119	1-216-081-61	RES-CHIP	22K	5%	1/10W
R120	1-216-055-61	RES-CHIP	1.8K	5%	1/10W
R121	1-216-081-61	RES-CHIP	22K	5%	1/10W
R122	1-216-109-61	RES-CHIP	330K	5%	1/10W
R123	1-216-081-61	RES-CHIP	22K	5%	1/10W
R124	1-216-081-61	RES-CHIP	22K	5%	1/10W
R125	1-215-925-11	METAL OXIDE	22K	5%	3W
R128	1-216-025-61	RES-CHIP	100	5%	1/10W
R129	1-216-009-61	METAL CHIP	22	5%	1/10W
R130	1-216-049-61	RES-CHIP	1K	5%	1/10W
R133	1-249-389-11	CARBON	4.7	5%	1/4W
R134	1-216-295-61	SHORT CHIP	0		
R135	1-216-295-61	SHORT CHIP	0		
R200	1-216-069-61	RES-CHIP	6.8K	5%	1/10W
R201	1-216-059-61	RES-CHIP	2.7K	5%	1/10W
R202	1-216-049-61	RES-CHIP	1K	5%	1/10W
R203	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R204	1-216-069-61	RES-CHIP	6.8K	5%	1/10W
R205	1-216-053-61	RES-CHIP	1.5K	5%	1/10W
R206	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R207	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R210	1-249-409-11	CARBON	220	5%	1/4W
R211	1-249-409-11	CARBON	220	5%	1/4W
R212	1-216-049-61	RES-CHIP	1K	5%	1/10W
R214	1-216-295-61	SHORT CHIP	0		
R215	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R216	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R217	1-216-059-61	RES-CHIP	2.7K	5%	1/10W
R218	1-216-059-61	RES-CHIP	2.7K	5%	1/10W
R219	1-216-025-61	RES-CHIP	100	5%	1/10W
R220	1-216-025-61	RES-CHIP	100	5%	1/10W
R221	1-216-025-61	RES-CHIP	100	5%	1/10W
R222	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R225	1-216-077-61	RES CHIP 15K		(2012)	
R228	1-216-295-61	SHORT CHIP	0		
R229	1-216-053-61	RES-CHIP	1.5K	5%	1/10W
R230	1-216-053-61	RES-CHIP	1.5K	5%	1/10W
R231	1-216-049-61	RES-CHIP	1K	5%	1/10W
R234	1-216-113-61	RES-CHIP	470K	5%	1/10W
R235	1-216-113-61	RES-CHIP	470K	5%	1/10W
R240	1-216-077-61	RES CHIP 15K		(2012)	
R241	1-216-077-61	RES CHIP 15K		(2012)	
R242	1-216-073-61	RES-CHIP	10K	5%	1/10W
R243	1-216-073-61	RES-CHIP	10K	5%	1/10W
R244	1-216-113-61	RES-CHIP	470K	5%	1/10W
R248	1-216-093-11	METAL CHIP	68K	5%	1/10W
R249	1-216-049-61	RES-CHIP	1K	5%	1/10W
R300	1-216-033-61	RES-CHIP	220	5%	1/10W
R301	1-216-033-61	RES-CHIP	220	5%	1/10W
R302	1-216-033-61	RES-CHIP	220	5%	1/10W
R303	1-216-033-61	RES-CHIP	220	5%	1/10W
R304	1-216-051-61	RES-CHIP	1.2K	5%	1/10W
R305	1-216-045-00	METAL CHIP	680	5%	1/10W
R306	1-216-039-61	RES-CHIP	390	5%	1/10W
R307	1-216-033-61	RES-CHIP	220	5%	1/10W
R308	1-216-027-61	RES-CHIP	120	5%	1/10W
R309	1-216-029-61	RES-CHIP	150	5%	1/10W
R310	1-216-039-61	RES-CHIP	390	5%	1/10W
R311	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R312	1-216-033-61	RES-CHIP	220	5%	1/10W
R313	1-216-037-61	RES-CHIP	330	5%	1/10W
R314	1-216-037-61	RES-CHIP	330	5%	1/10W
R315	1-216-081-61	RES-CHIP	22K	5%	1/10W
R316	1-216-031-61	RES-CHIP	180	5%	1/10W
R317	1-216-041-61	RES-CHIP	470	5%	1/10W
R318	1-216-081-61	RES-CHIP	22K	5%	1/10W
R319	1-216-041-61	RES-CHIP	470	5%	1/10W
R320	1-216-081-61	RES-CHIP	22K	5%	1/10W
R323	1-216-041-61	RES-CHIP	470	5%	1/10W
R324	1-216-041-61	RES-CHIP	470	5%	1/10W
R325	1-216-081-61	RES-CHIP	22K	5%	1/10W
R326	1-216-081-61	RES-CHIP	22K	5%	1/10W
R327	1-216-049-61	RES-CHIP	1K	5%	1/10W
R328	1-216-025-61	RES-CHIP	100	5%	1/10W
R329	1-216-043-61	RES-CHIP	560	5%	1/10W
R330	1-216-295-61	SHORT CHIP	0		
R331	1-216-295-61	SHORT CHIP	0		
R332	1-216-295-61	SHORT CHIP	0		
R333	1-216-041-61	RES-CHIP	470	5%	1/10W
R334	1-216-025-61	RES-CHIP	100	5%	1/10W
R335	1-216-025-61	RES-CHIP	100	5%	1/10W
R336	1-216-025-61	RES-CHIP	100	5%	1/10W
R337	1-216-073-61	RES-CHIP	10K	5%	1/10W
R339	1-216-035-61	RES-CHIP	270	5%	1/10W
R340	1-163-031-11	CERAMIC CHIP	0.01UF		50V
R342	1-216-295-61	SHORT CHIP	0		
R345	1-216-025-61	RES-CHIP	100	5%	1/10W
R348	1-216-025-61	RES-CHIP	100	5%	1/10W
R350	1-216-039-61	RES-CHIP	390	5%	1/10W
R353	1-216-119-61	RES-CHIP	820K	5%	1/10W
R354	1-216-119-61	RES-CHIP	820K	5%	1/10W
R355	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R356	1-216-061-00	RES-CHIP	3.3K	5%	1/10W
R357	1-216-101-61	RES-CHIP	150K	5%	1/10W
R358	1-216-025-61	RES-CHIP	100	5%	1/10W
R360	1-216-065-61	RES-CHIP	4.7K	5%	1/10W
R361	1-216-033-61	RES-CHIP	220	5%	1/10W
R362	1-216-083-61	RES-CHIP	27K	5%	1/10W
R363	1-216-295-61	SHORT CHIP	0		
R364	1-216-077-61	RES CHIP 15K		(2012)	
R365	1-216-295-61	SHORT CHIP	0		
R367	1-216-099-61	RES-CHIP	120K	5%	1/10W
R368	1-216-049-61	RES-CHIP	1K	5%	1/10W
R369	1-216-123-61	RES-CHIP	1.2M	5%	1/10W
R370	1-216-083-61	RES-CHIP	27K	5%	1/10W
R371	1-208-820-11	METAL CHIP	39K	0.5%	1/10W
R374	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R376	1-216-295-61	SHORT CHIP	0		
R389	1-216-109-61	RES-CHIP	330K	5%	1/10W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R392	1-216-069-61	RES-CHIP	6.8K	5%	1/10W
R393	1-216-295-61	SHORT CHIP	0		
R400	1-216-295-61	SHORT CHIP	0		
R401	1-216-049-61	RES-CHIP	1K	5%	1/10W
R402	1-216-025-61	RES-CHIP	100	5%	1/10W
R403	1-216-073-61	RES-CHIP	10K	5%	1/10W
R404	1-216-049-61	RES-CHIP	1K	5%	1/10W
R405	1-216-073-61	RES-CHIP	10K	5%	1/10W
R406	1-216-113-61	RES-CHIP	470K	5%	1/10W
R407	1-216-049-61	RES-CHIP	1K	5%	1/10W
R408	1-216-049-61	RES-CHIP	1K	5%	1/10W
R409	1-216-113-61	RES-CHIP	470K	5%	1/10W
R410	1-216-025-61	RES-CHIP	100	5%	1/10W
R411	1-216-049-61	RES-CHIP	1K	5%	1/10W
R412	1-216-049-61	RES-CHIP	1K	5%	1/10W
R413	1-216-113-61	RES-CHIP	470K	5%	1/10W
R414	1-216-049-61	RES-CHIP	1K	5%	1/10W
R415	1-216-073-61	RES-CHIP	10K	5%	1/10W
R416	1-216-073-61	RES-CHIP	10K	5%	1/10W
R417	1-216-021-61	RES-CHIP	68	5%	1/10W
R418	1-216-025-61	RES-CHIP	100	5%	1/10W
R419	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R420	1-216-049-61	RES-CHIP	1K	5%	1/10W
R421	1-216-049-61	RES-CHIP	1K	5%	1/10W
R422	1-216-091-61	RES-CHIP	56K	5%	1/10W
R423	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R424	1-216-091-61	RES-CHIP	56K	5%	1/10W
R425	1-216-022-00	METAL CHIP	75	5%	1/10W
R426	1-216-049-61	RES-CHIP	1K	5%	1/10W
R427	1-216-051-61	RES-CHIP	1.2K	5%	1/10W
R428	1-216-041-61	RES-CHIP	470	5%	1/10W
R429	1-216-073-61	RES-CHIP	10K	5%	1/10W
R430	1-216-063-61	RES-CHIP	3.9K	5%	1/10W
R431	1-216-091-61	RES-CHIP	56K	5%	1/10W
R432	1-216-121-61	RES-CHIP	1M	5%	1/10W
R433	1-216-091-61	RES-CHIP	56K	5%	1/10W
R434	1-216-049-61	RES-CHIP	1K	5%	1/10W
R435	1-216-121-61	RES-CHIP	1M	5%	1/10W
R436	1-216-022-00	METAL CHIP	75	5%	1/10W
R438	1-216-049-61	RES-CHIP	1K	5%	1/10W
R440	1-216-121-61	RES-CHIP	1M	5%	1/10W
R443	1-216-121-61	RES-CHIP	1M	5%	1/10W
R445	1-216-089-61	RES CHIP 47K		(2012)	
R446	1-216-089-61	RES CHIP 47K		(2012)	
R500	1-260-126-11	CARBON	180K	5%	1/2W
R501	1-249-419-11	CARBON	1.5K	5%	1/4W
R502	1-216-370-11	METAL OXIDE	1.2	5%	2W
R503	1-216-091-61	RES-CHIP	56K	5%	1/10W
R504	1-216-091-61	RES-CHIP	56K	5%	1/10W
R505	1-216-065-61	RES-CHIP	4.7K	5%	1/10W
R506	1-260-125-11	CARBON	150K	5%	1/2W
R507	1-260-288-11	CARBON	0.47	5%	1/2W
R508	1-260-288-11	CARBON	0.47	5%	1/2W
R509	1-260-288-11	CARBON	0.47	5%	1/2W
R510	1-260-127-11	CARBON	220K	5%	1/2W
R511	1-215-449-00	METAL	15K	1%	1/4W
R512	1-215-453-00	METAL	22K	1%	1/4W
R513	1-215-445-00	METAL	10K	1%	1/4W
R514	1-249-421-11	CARBON	2.2K	5%	1/4W
R553	1-249-385-11	CARBON	2.2	5%	1/4W
R554	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R557	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W

REF NO.	PART NO.	DESCRIPTION		REMARK	
R558	1-216-081-61	RES-CHIP	22K	5%	1/10W
R559	1-216-089-61	RES CHIP 47K		(2012)	
R563	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R564	1-215-865-11	METAL OXIDE	220	5%	1W
R565	1-216-350-11	METAL OXIDE	1.2	5%	1W
R567	1-208-790-11	METAL CHIP	2.2K	0.5%	1/10W
R568	1-215-461-00	METAL	47K	1%	1/4W
R600	1-215-915-11	METAL OXIDE	470	5%	3W
R602	1-240-262-11	CEMENTED	0.68	5%	10W
R603	1-240-262-11	CEMENTED	0.68	5%	10W
R605	1-217-191-21	WIREWOUND	0.18	5%	2W
R606	1-216-045-00	METAL CHIP	680	5%	1/10W
R608	1-260-127-11	CARBON	220K	5%	1/2W
R609	1-216-091-61	RES-CHIP	56K	5%	1/10W
R610	1-215-926-00	METAL OXIDE	33K	5%	3W
R611	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R612	1-249-420-11	CARBON	1.8K	5%	1/4W
R615	1-215-877-11	METAL OXIDE	22K	5%	1W
R617	1-216-049-61	RES-CHIP	1K	5%	1/10W
R619	⚠ 1-240-917-61	METAL	8.2M	5%	1W
R620	1-249-389-11	CARBON	4.7	5%	1/4W
R623	1-216-053-61	RES-CHIP	1.5K	5%	1/10W
R624	1-260-126-61	CARBON	180K	5%	1/2W
R627	1-240-262-11	CEMENTED	0.68	5%	10W
R800	1-216-049-61	RES-CHIP	1K	5%	1/10W
R801	1-216-081-61	RES-CHIP	22K	5%	1/10W
R802	1-215-917-11	METAL OXIDE	1K	5%	3W
R803	1-260-332-51	CARBON	2.2K	5%	1/2W
R806	1-216-295-61	SHORT CHIP	0		
R808	1-249-421-11	CARBON	2.2K	5%	1/4W
R810	1-215-886-11	METAL OXIDE	100	5%	2W
R811	1-215-911-11	METAL OXIDE	100	5%	3W
R812	1-215-917-11	METAL OXIDE	1K	5%	3W
R813	1-216-049-61	RES-CHIP	1K	5%	1/10W
R814	1-215-917-11	METAL OXIDE	1K	5%	3W
R860	1-216-103-61	METAL CHIP	180K	5%	1/10W
R861	1-216-295-61	SHORT CHIP	0		
R862	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R863	1-216-073-61	RES-CHIP	10K	5%	1/10W
R864	1-208-794-11	METAL CHIP	3.3K	0.5%	1/10W
R865	1-216-073-61	RES-CHIP	10K	5%	1/10W
R866	1-216-049-61	RES-CHIP	1K	5%	1/10W
R867	1-208-812-11	METAL CHIP	18K	0.5%	1/10W
R868	1-249-393-11	CARBON	10	5%	1/4W
R869	1-249-381-11	CARBON	1	5%	1/4W
R870	1-218-760-11	METAL CHIP	220K	0.5%	1/10W
R874	1-215-475-00	METAL	180K	1%	1/4W
R878	1-216-049-61	RES-CHIP	1K	5%	1/10W
R879	1-216-057-61	RES-CHIP	2.2K	5%	1/10W
R880	1-216-097-61	RES-CHIP	100K	5%	1/10W
R881	1-216-085-00	METAL CHIP	33K	5%	1/10W
R882	1-216-073-61	RES-CHIP	10K	5%	1/10W
R883	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R884	1-216-089-61	RES CHIP 47K		(2012)	
R885	1-216-073-61	RES-CHIP	10K	5%	1/10W
R886	1-216-295-61	SHORT CHIP	0		
R887	1-215-477-00	METAL	220K	1%	1/4W
R888	1-215-477-00	METAL	220K	1%	1/4W
R889	1-208-830-11	METAL CHIP	100K	0.5%	1/10W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

A CV

REF NO.		PART NO.	DESCRIPTION			REMARK
			<RESISTOR VARIABLE>			
RV300		1-241-769-11	RES ADJ CERMET 470K			
			<SWITCH>			
S001		1-692-431-21	SWITCH TACTILE			
S002		1-692-431-21	SWITCH TACTILE			
S003		1-692-431-21	SWITCH TACTILE			
S004		1-692-431-21	SWITCH TACTILE			
S005		1-692-431-21	SWITCH TACTILE			
S006		1-692-431-21	SWITCH TACTILE			
S600	⚠	1-571-433-31	SWITCH PUSH (AC POWER)			
S800		1-572-707-11	SWITCH LEVER			
SWF100		1-781-042-11	FILTER SURFACE WAVE			
			<TRANSFORMER>			
T503	⚠	1-453-329-21	TRANSFORMER ASSY FLYBACK (NX-4751//M3A4)			
T600		1-424-682-11	TRANSFORMER LINE FILTER			
T601	⚠	1-437-333-21	TRANSFORMER CONVERTER (SRT)			
T800		1-435-374-11	TRANSFORMER FERRITE (HDT)			
			<THERMISTOR>			
THP600		1-803-744-11	THERMISTOR POSITIVE			
			<TUNER>			
TU100		8-598-591-10	TUNER VSS BT-AG402			
			<VARISTOR>			
VDR600		1-803-830-11	VARISTOR (ERZV14D621)			
			<CRYSTAL>			
X001		1-577-358-21	VIBRATOR CERAMIC			
X300		1-567-505-11	OSCILLATOR CRYSTAL			
X301		1-567-504-11	OSCILLATOR CRYSTAL			

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CV BOARD MOUNTED (NOT STOCKED)
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		4-382-854-01	SCREW (M3X8) P SW (+)			
			<CAPACITOR>			
C701		1-115-350-51	CERAMIC	0.0047UF		2KV
C702		1-102-074-00	CERAMIC	0.001UF	10.00%	50V
C703		1-107-651-11	ELECT	4.7UF	20.00%	250V
C704		1-130-202-00	FILM	0.022UF	5.00%	400V
C706		1-126-947-11	ELECT	47UF	20.00%	35V
C708		1-102-114-00	CERAMIC	470PF	10.00%	50V
C709		1-102-114-00	CERAMIC	470PF	10.00%	50V
C710		1-102-114-00	CERAMIC	470PF	10.00%	50V
C712		1-102-114-00	CERAMIC	470PF	10.00%	50V
C713		1-102-115-00	CERAMIC	560PF	10.00%	50V
C714		1-102-115-00	CERAMIC	560PF	10.00%	50V
C716		1-126-933-11	ELECT	100UF	20.00%	16V
C717		1-102-852-91	CERAMIC	47PF	5.00%	50V
C718		1-126-933-11	ELECT	100UF	20.00%	16V
C719		1-102-116-00	CERAMIC	680PF	10.00%	50V
			<COATING LEAD>			
CLP701	*	4-042-408-01	PIN COATING LEAD			
			<CONNECTOR>			
CN701	*	1-564-508-11	PLUG CONNECTOR 5P			
CN702		1-695-915-11	TAB (CONTACT)			
CN703	*	1-564-509-11	PLUG CONNECTOR 6P			
CN704		1-695-915-11	TAB (CONTACT)			
			<DIODE>			
D701		8-719-911-19	DIODE 1SS119-25			
D702		8-719-911-19	DIODE 1SS119-25			
D703		8-719-911-19	DIODE 1SS119-25			
D707		8-719-911-19	DIODE 1SS119-25			
D708		8-719-911-19	DIODE 1SS119-25			
D709		8-719-911-19	DIODE 1SS119-25			
D713		8-719-911-19	DIODE 1SS119-25			
D714		8-719-911-19	DIODE 1SS119-25			
D715		8-719-911-19	DIODE 1SS119-25			
D716		8-719-911-19	DIODE 1SS119-25			
D717		8-719-070-16	DIODE NNCD9.1A-T1			
			<SOCKET>			
J701	⚠	1-540-071-22	SOCKET CRT			
			<COIL>			
L701		1-414-185-41	INDUCTOR	22UH		
L710		1-414-183-41	INDUCTOR	10UH		
			<TRANSISTOR>			
Q704		8-729-326-11	TRANSISTOR 2SC2611			
Q705		8-729-326-11	TRANSISTOR 2SC2611			
Q706		8-729-326-11	TRANSISTOR 2SC2611			
Q707		8-729-200-17	TRANSISTOR 2SA1091-O			
Q708		8-729-200-17	TRANSISTOR 2SA1091-O			
Q709		8-729-200-17	TRANSISTOR 2SA1091-O			
Q710		8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q711		8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q712		8-729-119-78	TRANSISTOR 2SC2785-HFE			
			<RESISTOR>			
R703		1-219-752-11	METAL	100K	5%	1/2W
R706		1-215-417-00	METAL	680	1%	1/4W
R707		1-215-413-00	METAL	470	1%	1/4W
R708		1-216-387-11	METAL OXIDE	0.68	5%	3W
R710		1-216-486-00	METAL OXIDE	8.2K	5%	3W
R712		1-216-486-00	METAL OXIDE	8.2K	5%	3W
R714		1-216-486-00	METAL OXIDE	8.2K	5%	3W
R716		1-249-923-11	CARBON	1K	1%	1/4W
R717		1-249-923-11	CARBON	1K	1%	1/4W
R718		1-249-923-11	CARBON	1K	1%	1/4W

CV K

REF NO.	PART NO.	DESCRIPTION		REMARK	
R725	1-249-421-11	CARBON	2.2K	5%	1/4W
R726	1-249-421-11	CARBON	2.2K	5%	1/4W
R727	1-249-421-11	CARBON	2.2K	5%	1/4W
R728	1-249-408-11	CARBON	180	5%	1/4W
R729	1-249-408-11	CARBON	180	5%	1/4W
R730	1-249-408-11	CARBON	180	5%	1/4W
R731	1-249-407-11	CARBON	150	5%	1/4W
R732	1-249-407-11	CARBON	150	5%	1/4W
R733	1-249-407-11	CARBON	150	5%	1/4W
R734	1-219-753-11	METAL	220K	5%	1/2W
R738	1-247-807-31	CARBON	100	5%	1/4W
R739	1-247-807-31	CARBON	100	5%	1/4W
R740	1-247-807-31	CARBON	100	5%	1/4W
R755	1-249-418-11	CARBON	1.2K	5%	1/4W
R756	1-249-418-11	CARBON	1.2K	5%	1/4W
R757	1-249-418-11	CARBON	1.2K	5%	1/4W
		<RESISTOR VARIABLE>			
RV702	1-241-656-11	RES ADJ METAL FILM 110M			
		<CONNECTOR>			
CN3251 *	-564-518-11	PLUG CONNECTOR 3P			
CN3252 *	1-564-519-11	PLUG CONNECTOR 4P			
		<DIODE>			
D3251	8-719-110-72	DIODE RD30ESB2			
D3252	8-719-110-72	DIODE RD30ESB2			
D3253	8-719-110-72	DIODE RD30ESB2			
D3254	8-719-110-72	DIODE RD30ESB2			
D3255	8-719-110-72	DIODE RD30ESB2			
D3256	8-719-110-72	DIODE RD30ESB2			
D3257	8-719-110-72	DIODE RD30ESB2			
D3258	8-719-110-72	DIODE RD30ESB2			
		<SOCKET>			
J3251	1-694-467-11	TERMINAL PUSH (2P)			
J3252	1-694-719-11	TERMINAL PUSH (4P)			

****

K BOARD MOUNTED (NOT STOCKED)
****

	4-382-854-11	SCREW (M3X10) P SW (+)			
		<CAPACITOR>			
C1501	1-136-165-00	FILM	0.1UF	5.00%	50V
C1502	1-136-165-00	FILM	0.1UF	5.00%	50V
C1503	1-136-169-00	FILM	0.22UF	5.00%	50V
C1505	1-126-934-11	ELECT	220UF	20.00%	16V
C1506	1-128-551-11	ELECT	22UF	20.00%	63V
C1507	1-126-934-11	ELECT	220UF	20.00%	16V
C1508	1-126-961-11	ELECT	2.2UF	20.00%	50V
C1513	1-126-962-11	ELECT	3.3UF	20.00%	50V
C1514	1-128-551-11	ELECT	22UF	20.00%	63V
C1515	1-126-933-11	ELECT	100UF	20.00%	16V
C1516	1-126-964-11	ELECT	10UF	20.00%	50V
C1517	1-126-961-11	ELECT	2.2UF	20.00%	50V
C1519	1-126-934-11	ELECT	220UF	20.00%	16V
C1521	8-719-109-85	DIODE RD5.1ESB2			
C1524	1-126-943-11	ELECT	2200UF	20.00%	25V
C1527	1-136-165-00	FILM	0.1UF	5.00%	50V
C1528	1-126-953-11	ELECT	2200UF	20.00%	35V
C1529	1-126-953-11	ELECT	2200UF	20.00%	35V
C1531	1-123-544-00	ELECT	2.2UF	20.00%	50V
C1532	1-123-544-00	ELECT	2.2UF	20.00%	50V
C1599	1-126-948-11	ELECT	100UF	20.00%	35V
		<CONNECTOR>			
CN1501 *	1-564-508-11	PLUG CONNECTOR 5P			
CN1502 *	1-564-507-11	PLUG CONNECTOR 4P			
CN1503 *	1-564-506-11	PLUG CONNECTOR 3P			
CN1504 *	1-564-506-11	PLUG CONNECTOR 3P			
CN1505 *	1-564-507-11	PLUG CONNECTOR 4P			
		<DIODE>			
D1501	8-719-911-19	DIODE 1SS119-25			
D1502	8-719-110-72	DIODE RD30ESB2			
D1503	8-719-110-72	DIODE RD30ESB2			
		<IC>			
IC1501	8-759-980-43	IC TDA2009A			
		<PROTECTOR MODULE>			
PS1501	1-532-984-11	IC LINK		2A	50V
		<TRANSISTOR>			
Q1503	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q1504	8-729-202-67	TRANSISTOR 2SK246-GR3			
		<RESISTOR>			
R1501	1-249-385-11	CARBON	2.2	5%	1/4W
R1502	1-249-385-11	CARBON	2.2	5%	1/4W
R1503	1-249-417-11	CARBON	1K	5%	1/4W
R1504	1-249-421-11	CARBON	2.2K	5%	1/4W
R1505	1-249-400-11	CARBON	39	5%	1/4W
R1506	1-249-400-11	CARBON	39	5%	1/4W
R1507	1-249-418-11	CARBON	1.2K	5%	1/4W
R1508	1-249-418-11	CARBON	1.2K	5%	1/4W
R1512	1-249-429-11	CARBON	10K	5%	1/4W
R1516	1-249-429-11	CARBON	10K	5%	1/4W
R1517	1-249-409-11	CARBON	220	5%	1/4W
R1518	1-249-418-11	CARBON	1.2K	5%	1/4W
R1521	1-249-432-11	CARBON	18K	5%	1/4W
R1522	1-249-425-11	CARBON	4.7K	5%	1/4W
R1523	1-249-421-11	CARBON	2.2K	5%	1/4W
R1524	1-249-438-11	CARBON	56K	5%	1/4W
R1525	1-249-413-11	CARBON	470	5%	1/4W
R1526	1-249-419-11	CARBON	1.5K	5%	1/4W
R1528	1-249-419-11	CARBON	1.5K	5%	1/4W
R1534	1-216-388-11	METAL OXIDE	0.82	5%	3W

K1 **K2**

REF NO.	PART NO.	DESCRIPTION	REMARK
**********			
		K1 BOARD MOUNTED (NOT STOCKED)	
		**********	
		<CONNECTOR>	
CN3251	* 1-564-518-11	PLUG, CONNECTOR 3P	
		<DIODE>	
D3251	8-719-110-72	DIODE RD30ESB2	
D3252	8-719-110-72	DIODE RD30ESB2	
D3253	8-719-110-72	DIODE RD30ESB2	
D3254	8-719-110-72	DIODE RD30ESB2	
		<SOCKET>	
J3251	1-694-467-11	TERMINAL, PUSH (2P)	
**********			
		K2 BOARD MOUNTED (NOT STOCKED)	
		**********	
		<CONNECTOR>	
CN3252	* 1-564-519-11	PLUG, CONNECTOR 4P	
		<DIODE>	
D3255	8-719-110-72	DIODE RD30ESB2	
D3256	8-719-110-72	DIODE RD30ESB2	
D3257	8-719-110-72	DIODE RD30ESB2	
D3258	8-719-110-72	DIODE RD30ESB2	
		<SOCKET>	
J3252	1-694-719-11	TERMINAL, PUSH (4P)	

****

	ACCESSORIES AND PACKING MATERIALS
	**********
3-701-910-00	SCREW SPECIAL (DIA. 3.8X20)
*4-039-372-01	BAG PROTECTION
*4-089-641-01	CUSHION UPPER
*4-089-642-01	CUSHION LOWER
*4-092-808-01	INDIVIDUAL CARTON
*4-068-528-21	FOOT
4-392-003-11	BAND HOLD
4-392-004-11	CLIP

****

	REMOTE COMMANDER
	**********
1-477-047-11	REMOTE COMMANDER (RM-969)
4-084-290-01	BATTERY COVER REMOTE COMMANDER

Sony Corporation
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Visual Products

9-872-346-01

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